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Small Arms Training

Volume I, Pamphlet No. 7

·303-inch Machine Gun

Part II.—Training

(This pamphlet supersedes S.A.T., Vol. I, Pamphlet No. 7,
Part II, Training, 1941)

1944

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GENERAL

Small Arms Training, Vol. I, Pamphlet No. 7, Part II, deals in general with the handling of the gun. It aims at training gun numbers in drill; and the application of drill to ground, thus fitting a man to take his place as a member of a machine gun team in battle.

It further aims at training headquarters of platoons and sections in their duties in the field.

The drills are arranged to meet the average conditions of mobile warfare. Latitude must be exercised in their application.

These drills are generally appropriate to all units.

DEFINITIONS

(See also S.A.T., Vol. I, Pamphlet No. 7, Part III.)

Arc of fire.—Arc over which it is desired that the guns can bear from a given gun position. Its boundaries are described as "right of arc" and "left of arc".

Auxiliary aiming mark.—A gun aiming mark indicated by the fire controller in the target area, with the object of maintaining fire on the target. It is employed when, for any reason, a point of aim on the target is not used.

Deflection.—A lateral displacement of the lines of any, or all, guns.

Direct fire.—When the gun is laid directly on the target by means of the backsight and foresight.

Fire control.—The necessary arrangements and orders for hitting the target.

Fire controller.—The individual responsible for giving the orders for the engagement of a target to the men of a fire unit.

Fire direction.—The term applied to instructions given by the commander of more than one fire unit to the fire unit commanders as to how their fire is to be applied.

Gun aiming mark.—A mark on which the gun is laid to cause the bullets to strike the correct position on the target for that gun.

In action.—A machine gun is said to be in action when it is mounted with reference to its arc of fire and the necessary men, equipment, and ammunition are present at the gun to enable fire to be opened when ordered.

Indirect fire.—When the gun is laid to hit a given target by other means than by laying on it direct.

Laying.—The process of elevating, or depressing, and traversing a gun until its axis is made to point in any given direction. On conclusion of this process the gun is said to be laid.

Line.—The direction in which a gun or guns are pointed.

Near limit of arc.—The near edge of the zone on which fire is required.

Observed fire.—When the effect of the fire can be observed from the gun or from the fire controller's observation post.

Observation post.—A post from which a particular area can be kept under observation, or from which artillery, mortar, or machine gun fire can be controlled and corrected.

Pivot gun.—The gun used as a basis for calculation.

Registering.—The recording of the direction and elevation necessary to hit any given target as found by ranging.

Rendezvous.—A pre-arranged place of assembly (RV)

Zero line.—A line of reference, on which all guns are parallel, and from which switches are measured.

Safety precautions

On all occasions when the gun and dummy cartridges are used for instructional purposes the instructor will carry out the following safety precautions:—

- (a) Inspect all locks to ensure that the striker does not protrude through the firing pin hole.
- (b) Inspect all ammunition to ensure that all cartridges are dummies.

When instruction is being given in mechanical subjects, D.P. stores, if available, will always be used.

SECTION 11.—ELEMENTARY GUN DRILL

1. During elementary gun drill the gun will be mounted to suit the sitting position, but emphasis will be laid on the fact that, on active service, the tripod will always be adjusted to suit the ground and available cover.

2. The object of elementary gun drill is to render the man proficient in the duties of gun numbers in handling the weapon.

3. It aims at teaching the man:—

- (a) To mount and dismount gun.
- (b) To load and unload the gun.
- (c) To bring the gun into action.
- (d) To cease firing.
- (e) To adjust the sights and lay the gun.
- (f) To fire the gun, to stop firing, and to go on firing.
- (g) Consistency of tap and adjustment of clamp, traversing and swinging traverse.
- (h) Controlled corrections, direct and indirect fire.

Instructor's notes

Methods of carrying out the drill.

1. The stores required vary according to the portion of the drill which is being carried out, but for all drills the squad requires a gun, tripod, spare parts case complete, condenser can and tube, and two ammunition liners with belts and dummy cartridges. When additional stores are required details are given in the instructional notes. The condenser tube used will consist of a piece of $1\frac{1}{2}$ -in. rope, 6 ft. long.

2. Laying out the stores.—Before the squad falls in, the gun and tripod will be placed in line on the ground a few paces apart, tripod on the left with the legs to the rear; the muzzle of the gun pointing to the front, the condenser tube attached, and the spare parts case close to and on the right of the gun. The ammunition liners and condenser can will be placed about a pace apart, with the condenser can on the right, a few paces in rear of the gun and tripod.

3. Fall in.—The squad is fallen in, in single rank. The instructor details any three men. He falls them in a short distance in rear of the stores and numbers them off. The remainder of the squad under instruction is placed in such a position that the maximum benefit is derived, although they themselves are not at the moment acting as gun numbers.

If at any time the instructor wishes to change round Nos. 1, 2, and 3, he should order "Fall out 1." No. 1 becomes No. 3, No. 2 becomes No. 1, and No. 3 becomes No. 2, the detachment renumbering at once. The instructor will detail three fresh numbers to take their place when he wishes to do so.

4. The instructor must see that the standard of drill is maintained throughout, that the Nos. remain still and correctly placed on the completion of any necessary movement, particularly in the sitting or lying positions.

When the instructor wishes to explain, criticize, or demonstrate, he will first order "Rest" to allow of relaxation of the muscles. Before the drill is resumed he will ensure that the Nos. adopt the correct position, alert and ready for any order. This will be effected by the order "Position".

As far as is possible, the duties of No. 1 will first be taught, and practised by the whole squad. The instructor will then teach and practise the squad in the duties of Nos. 2 and 3 in that order, before drilling the detachment collectively.

5. The orders given by the instructor are given in inverted commas at the head of each paragraph. All orders will be given verbally.

LESSON 45.—TAKE POST

“Take post”

The detachment turns to the right, with the exception of No. 1. No. 1 doubles forward and lies down on the left of the tripod.

No. 2 doubles forward, lies down on the right side of the gun and slings the spare parts case over his right shoulder.

No. 3 doubles forward and lies down between the condenser can and the ammunition liners.

All numbers lie facing forward with their arms folded.

NOTE.—When the ground is too wet, the detachment should be instructed to kneel instead of lying down, but waterproof sheets should be used to avoid kneeling when possible.

LESSON 46.—MOUNT AND DISMOUNT GUN

Instructor's notes

The instructor will indicate to No. 1 the spot over which the socket is to be mounted, and the direction in which the gun will point. This spot should be a few yards in front of No. 1.

The action of No. 1 in mounting and dismounting the TRIPOD will be taught first, ending and beginning respectively at the point where No. 1 is seated behind the tripod, and has withdrawn the pins.

The remaining duties of No. 1 and the duties of Nos. 2 and 3 will then be taught in that order.

The mounting of the gun with the crosshead attached should not be taught until the squad is proficient in other subjects of elementary gun drill.

1. To mount gun—crosshead on the tripod.

“Mount gun”

- (a) No. 1 jumps to his feet, picks up the tripod and doubles forward with it, placing it on the ground with the socket on the spot indicated. Standing astride the legs, he loosens both jamming handles simultaneously, grasps the crosshead bracket as far forward as possible with both hands, and with a forward and upward movement erects the tripod (Plate 9). Supporting the tripod with the left hand at the crosshead, the left forearm resting on the thigh, he ensures that the rear leg is on the ground and the socket upright over the spot indicated, and tightens up both jamming handles with the right hand if possible. After putting a final pressure with each hand on the jamming handles, he sits down behind the tripod, removing the elevating and crosshead joint pins.

- (b) As soon as No. 2 places the gun on the tripod No. 1 hands No. 2 the crosshead joint pin, and grips the left traversing handle with the left hand. When No. 2 has inserted the crosshead joint pin, No. 1 will insert the elevating joint pin and turn the handle down. He levels the gun by means of the elevating wheel, tests by tapping the traversing handles to see if the adjustment of the traversing clamp is approximately correct, tightening or loosening it if necessary, and sits, looking straight in front of him, with his elbows supported by the inside of his thighs, his third and little fingers round the traversing handles, forefingers on top, second finger underneath the safety catch, and thumbs resting lightly on the thumbpiece.

- (c) No. 2 picks up the gun with his left hand grasping the right traversing handle and his right arm over the barrel casing, and doubles forward to the right side of the tripod, arriving about the time No. 1 is removing the pins. He sinks on to the left knee, places the gun on the tripod, supporting the barrel casing with his right thigh, and with his right hand inserts the crosshead joint pin which No. 1 has handed to him, finally turning the handle down (Plate 10). He retains his hold with his left hand on the right traversing handle until the pin is home. He lies down to the right of the gun, looking towards it, his head in line with, but below, the level of the feed block. When No. 3 has brought up the condenser can and ammunition liners, No. 2 places the latter in line with the feed block, and inserts the condenser tube into the former.

- (d) No. 3 rips open and presses down the lids of the liners, and unscrews, but not completely so, the cap of the condenser can. He doubles forward to the right side of the gun, carrying the ammunition liners in his left hand and the condenser can in his right, arriving just as No. 2 lies down. He places the condenser can in a suitable position near the tripod, and the ammunition liners within easy reach of No. 2. He removes the cap of the condenser can, doubles back to a suitable position and lies down.

Note.—One lid only will be removed on each liner.

2. To mount gun—crosshead on the gun.

“Mount gun”

- (a) The duties of No. 1 are the same as in para. 1 (a) above, with the following exceptions:—

- (i) He will carry the tripod forward, holding the rear leg as far forward as possible with his right hand. His left hand will be around the traversing clamp.

(ii) When mounting the tripod he will hold the top of the socket with his left hand, his right hand grasping the rear leg.

(iii) He will ensure that the traversing clamp is unclamped.

(b) The duties of No. 2 are as in para. 1 (c) above, with the following exceptions:—

(i) He will place the pivot of the crosshead into the socket, ensuring that the chain of the crosshead joint pin is clear, and that both pins are in and turned down.

(ii) He lies down on the right side of the gun and tightens the traversing clamp.

3. When the gun has been mounted and Nos. 1, 2, and 3 are in position, the instructor should remark whether:—

(a) The actions of Nos. 1, 2, and 3 and their final positions were correct.

(b) The tripod is mounted with reference to the direction indicated.

(c) The gun is level and crosshead over the rear leg.

(d) The socket is upright and over the spot indicated.

(e) The tripod is at a suitable height for No. 1. (Until No. 1 has been taught to mount the gun in service positions, the instructor will see that the rear leg is suitably adjusted before the gun is mounted.)

(f) The sliding shutter is open.

(g) The traversing clamp is not too loose.

(h) The elevating and crosshead joint pins are home and locked.

(i) The jamming handles are really tight.

(j) The ammunition liners are close to, and in line with, the feed block, the condenser can is in position and the tube inserted in it.

(k) The squad will be shown how to correct a leaning mounting on the first occasion it arises.

4. To dismount gun—crosshead on the tripod.

“Dismount gun”

(a) No. 1 removes both pins, steadies the gun with his right hand, and, after No. 2 has removed the gun, replaces the pins and turns the handles down. He jumps to his feet, stands astride the tripod and loosens both jamming handles simultaneously, allowing the tripod to collapse on the ground. Grasping the crosshead with both hands, and giving the tripod a sharp upward and forward move-

ment, he folds up the legs and places the tripod on the ground. He clamps up both jamming handles, doubles to the rear, and lies down on the left of the tripod, reconditioning it, if necessary.

(b) No. 2 pushes the ammunition liners to the right, jumps to his feet, and, after No. 1 has removed the pins, lifts the gun off the tripod. He moves to the rear, clear of No. 1 and places the gun on the ground. He lies down on the right side of the gun, reconditioning it, if necessary.

(c) No. 3 doubles forward, seizes the liners in his left hand and the condenser can in his right, and places them on the ground a few paces in rear. He lies down between the liners and condenser can, reconditioning them.

5. To dismount gun—crosshead on the gun.

“Dismount gun”

(a) The duties of No. 1 are the same as in para. 4 (a) above, with the following exceptions:—

(i) He will not remove the pins.

(ii) When dismounting the tripod he will grasp the rear leg with his right hand and the socket with his left.

(b) The duties of No. 2 are the same as in para. 4 (b) above, with the following exceptions:—

(i) He will loosen the traversing clamp.

(ii) He will lift the gun and crosshead clear of the tripod.

LESSON 47.—LOAD AND UNLOAD

1. “Load”

(a) No. 1 pulls the crank handle on to the roller with the right hand, and advances the left hand to the left of the feed block, ready to grip the belt. When No. 2 has passed the tag of the belt through the feed block, No. 1 grips it and pulls it through the feed block as far as possible. He must pull the belt gently and straight when doing so. He releases the crank handle and repeats the above movements. Whilst pulling the crank handle on to the roller the belt will be held, but not pulled, with the left hand.

(b) No. 2 seizes the end of a belt with the right hand at the point where the tag joins the fabric, and pushes the tag through the feed block as far as possible. He will ensure that the belt is not twisted on entering the feed block.

2. Emphasize that the belt must be pulled gently and straight through the feed block. The men must avoid the natural tendency to pull it to the rear, *i.e.* towards No. 1, which might prevent the round being fed correctly into the feed block.

Should any man exhibit a tendency to slur the loading motions it may be advisable to make him load "by numbers", counting aloud while he is doing so.

The actions of Nos. 1 and 2 in loading and unloading will be taught together.

3. "Unload"

(a) If the tangent sight has been in use it will be lowered by No. 1, using the left hand. At the same time, without touching the belt, he pulls the crank handle on to the roller twice in succession with the right hand, allowing it to fly forward again in each case. He presses the top and bottom pawls of the feed block with his right hand, the top pawls with the fingers and the bottom with the thumb, taking care to keep his hand clear of the entrance to the feed block. When the belt is being withdrawn and the last round is clear of the feed block, he will press the thumbpiece.

(b) No. 2 withdraws the belt from the feed block when No. 1 presses the pawls, steadying the belt with his left hand near the liner. He packs the belt correctly in the liner.

LESSON 48.—ACTION AND CEASE FIRING

1. "Action"

Nos. 1, 2, and 3 perform the duties learnt in "Mount gun" and "Load", the gun being loaded as soon as it is correctly mounted (Plate 11).

2. "Cease firing"

Nos. 1, 2, and 3 perform the duties learnt in "Unload" and "Dismount gun", the gun being dismounted as soon as it has been unloaded correctly.

LESSON 49.—CLEAR GUN AND STAND CLEAR

1. "Clear gun"

No. 1 pulls the crank handle on to the roller, raises the rear cover, removes the lock from the lock guides, and eases the crank handle forward, allowing the lock to rest against the hinge of the rear cover. He reports "Gun clear".

NOTE.—If it is desirable to replace the lock in the gun and close the rear cover, but not to load the gun, the command "Lock in—cover down" may be used. If the gun is loaded, "Clear gun" will be preceded by "Unload".

2. "Stand clear"

Nos. 1, 2, and 3 jump to their feet and stand at ease in rear of the gun, No. 2 on the right.

Nos. 1 and 2 will leave the dial sight, if in use, and spare parts case on the position.

NOTE.—The order "Take post" will be used when it is desired that Nos. 1 and 2 should adopt their position at the gun.

LESSON 50.—TO ADJUST THE SIGHTS AND LAY THE GUN

Instructor's notes

Before the lesson is begun, instruction in aiming must have been given.

A few simple targets will be pointed out, the object being not to teach recognition, but accurate handling by No. 1.

The instructor should order "Lay" when he wants No. 1 to do so.

If no natural aiming points are available, a landscape target may be used, being placed at any convenient distance from the gun.

The gun will be loaded before the lesson begins.

1. "... hundred (or fifty)—(Indication)—lay".

No. 1 raises the tangent sight and adjusts the slide to the range ordered. When ordered, he begins to lay the gun by tapping it until the correct direction is obtained, and elevating or depressing until the aim is correct. He orders No. 2 to loosen the traversing clamp when a large change in direction is necessary, and to tighten the clamp again when the gun is roughly aligned on to the target. No. 1 retests his clamp.

When tapping the gun, or turning the wheel, No. 1 maintains control of the gun by keeping the disengaged hand on the traversing handle. When the gun is laid he orders "On" to No. 2 who raises his left hand in line with No. 1's shoulder; at the same time No. 1 raises the safety catch with his second fingers. Should No. 1 fail to understand an order at any time he will call "Again".

LESSON 51.—FIRE, STOP, GO ON

1. "Fire"

No. 1 instantly presses in the thumbpiece as far as possible by a quick and even movement of the thumbs, keeping his eyes directly on the target. He will fire in bursts, keeping the thumbpiece pressed for about four seconds before releasing and pressing again, occasionally checking his aim between bursts. No. 2 lowers his hand.

2. "Stop"

No. 1 immediately releases pressure on the thumbpiece and safety catch. He checks his aim, relaying on to the original point of aim if necessary.

NOTE.—The instructor should occasionally turn the elevating wheel while No. 1 is firing, in order to ensure correct relaying when "Stop" is ordered.

3. "Go on"

No. 1 resumes the action as detailed under "Fire."

LESSON 52.—CONSISTENCY OF TAP AND ADJUSTMENT OF CLAMP

Instructor's note

The gun will be loaded.

1. To teach a consistent tap

(a) The object is to develop a consistent automatic tap, in order that the line of sight is displaced the same amount each time the gun is tapped.

Each man will be practised in tapping the gun in both directions, the instructor noting the consistency. Correct holding will be taken after each tap.

(b) The instructor will explain the following points :—

(i) A strong tap with a tight clamp is preferable to a weak tap with a loose clamp.

(ii) When tapping with either hand, the gun must be held correctly with the other hand, and the safety catch kept raised.

(iii) The eyes must be directed to the front, and not at the rear end of the gun or along the sights.

2. To adjust the clamp

Instructor's notes

Additional stores :—M.G. target (S.A.T., Vol. V, 1931, Plate 66).

The gun will be mounted and loaded 25 yds. from the target.

(a) The object is to ascertain the degree of tightness required in the traversing clamp in order that the line of sight may be displaced 15 minutes each time the gun is tapped.

(b) The instructor will teach how to test and adjust the clamp. He will explain to the men that the interval between bulls,

at a distance of 25 yds., subtends 15 mins. He will ensure that if the gun moves too much or too little when the men are testing the clamp, the clamp is altered and not the tap.

(c) Whenever the gun is mounted, or a new No. 1 takes post at the gun, No. 1 tests the adjustment. The instructor should point out the importance of this test, and also the importance of the "feel" of the correct tightness, since later on no row of bulls will be available to assist in the adjustment.

3. Combination of consistency and adjustment

(a) The object of this lesson is to test the man's consistency of tap and adjustment of clamp.

(b) The instructor will inform No. 1 which way he has to tap, will then give a suitable range and order to get the gun laid on to one end of a horizontal row of bulls.

When ordered, No. 1 will lay the gun on to the bull's-eye indicated.

(c) On the order "Fire", No. 1 fires a burst, releases pressure on the thumbpiece, and strikes the traversing handle, deflecting the gun through an angle of 15 minutes. He fires another burst, taps as before, and will continue to do so, firing a burst after each tap until ordered to stop.

NOTES.—1. The instructor will warn No. 1 that in this particular case he will not check his aim or relay between bursts or on the command "Stop".

2. The men will be exercised in traversing in both directions.

3. Progressive instructions will be given in tapping right and left on a M.G. target.

LESSON 53.—TRAVERSING

Instructor's notes

Additional stores :—M.G. target (S.A.T., Vol. V, 1931, Plate 66).

The instructor will explain that the object of this lesson is that in traversing the firer will combine consistency of tap with maintenance of the line of sight on the target.

For drill in traversing, the gun will be mounted and loaded 25 yds. from the M.G. target.

The instructor will inform No. 1 which way he has to traverse : he will then give a suitable range and order to get the gun laid on to one end of an oblique row of bulls.

1. No. 1 proceeds as in Lesson 52 (3), except that after each tap, before firing again, he relays his gun on to the target immediately above or below the point to which his tap has carried it.

NOTE.—The instructor will warn No. 1 that, in order that his accuracy of traversing may be ascertained, he will not check his aim or relay on the command "Stop".

LESSON 54.—SWINGING TRAVERSE

Instructor's note

Additional stores :—M.G. target (S.A.T., Vol. V, 1931, Plate 66).

1. No. 1 loosens his traversing clamp and then lays as before on to the right or left end of the target. When ordered to fire, he swings the gun slowly to right or left, maintaining pressure on the thumb-piece throughout. He moves the gun, not by movement of the forearms alone, but by keeping the upper part of the body fairly rigid and forcing it over in the required direction.

2. Explain that this method of traversing is only employed against targets at close ranges, when the normal method of traversing is likely to prove too slow.

3. The following points will be explained:—

- (a) The traversing clamp must not be so loose that No. 1 loses control of the gun, the vibration of the gun rendering it easy to swing.
- (b) The rate of movement should be such that the line of sight is moved about 1 yd. in two seconds, when the target is 25 yds. from the gun. The movement of the gun is almost imperceptible.
- (c) The thumbpiece should be pressed before the gun begins to move. The importance of the gun being upright must be emphasized.
- (d) The above principles alone will be explained to the men, as proficiency can only be obtained when the gun is being fired.

LESSON 55.—CONTROLLED CORRECTIONS, DIRECT

Instructor's notes

The gun will be loaded and fire opened before Lessons 55 and 56 begin.

The object is to teach No. 1 to relay the gun after altering the sights on a correction to elevation being ordered.

1. "Stop—Up (or Down) . . . Hundred (or Fifty)—Go on"

No. 1 adjusts his sights in accordance with the order, relays on to his original point of aim by turning the handwheel, and continues firing.

LESSON 56.—CONTROLLED CORRECTIONS, INDIRECT

Instructor's notes

Additional stores :—Dial sight and aiming post.

The gun will be mounted, dial sight attached, and an aiming post put out about 15 yds. in front and to a flank. A suitable range will be set on the range drum of the dial sight, and the instructor will level the bubble and adjust the collimator on to the aiming post.

Before this lesson No. 1 must have received instruction in the use of the graduations on the elevation drums of the dial sight. He should have an elementary knowledge of the use of the aiming post.

1. Elevation

- (a) The object is to teach No. 1 to relevel the bubble after adjusting the range drum or angle of sight drum of the dial sight, on being given a correction in elevation.
- (b) "Stop—Up (or Down) . . . Hundred (or Fifty)—Go on"
No. 1 adjusts the range drum as ordered, elevates or depresses the gun by turning the handwheel until the bubble is central, checks and, if necessary, adjusts the alignment of the collimator.
- (c) "Stop—Up (or Down) . . . Minutes—Go on"
No. 1 adjusts the angle of sight drum as ordered and acts as in sub-para. (b) above.

2. Deflection

- (a) The object is to teach No. 1 to relay on to the aiming post, after adjusting the deflection drum, on being given a correction for line.
- (b) "Stop—Right (or Left) . . . Degrees . . . Minutes—Go on"
No. 1 adjusts the deflection drum as ordered, then taps the gun over until the aim is again relaid on to the aiming post. When relaid, the bubble should be central; if not, No. 1 will centralize it by turning the handwheel, and readjusting the collimator on to the aiming post.

LESSON 57.—TESTS OF ELEMENTARY GUN DRILL AND INSTRUMENTS

1. The following tests have been devised to assist officers in testing the efficiency of their men in elementary gun drill, and to ensure that no detail of the drill is overlooked. It is important that these tests should not be considered solely as competitions against time, for although quickness is necessary, accuracy is the first essential. No man should therefore be passed as efficient unless all the points are correctly carried out, even though he may complete them in the standard time. Men who, whilst passing the tests for accuracy, slightly exceed the standard time, should be tested again before being put back for further instruction.

2. The tests will be carried out in strict accordance with the detailed instructions given under the appropriate paragraphs of elementary gun drill, for unless the smallest details are insisted upon, the time limit will not be applicable. In carrying out tests time can be saved if the first detachment complete tests 1 to 4 consecutively; the remainder can be carried out as convenient.

3. It should be noted in tests 1, 2, 3, and 4 that **all** numbers are being tested in their own particular duties as No. 1, No. 2, or No. 3, and the tests should not be regarded as a test of the No. 1 only. Therefore, a man is not considered to have passed these tests until he has passed in the duties of all numbers.

4. It is essential for each man to have passed tests 1 to 9 before proceeding with the machine-gun course.

A record will be kept by each company commander and produced for inspection as required.

5. Method of conducting the tests

The conditions of the test will be carefully explained before the test begins, including the time allowed, and when the time allowance begins and finishes.

A timekeeper will be appointed. A stop watch should be used if available.

Stores required :—As for all elementary gun drill in tests 1 to 8.

Words of command will be given as in the appropriate heading in elementary gun drill.

Name of test	Conditions before test	Number of tests	Time allowed	To pass	Remarks
(1) No. 1 Mount gun.	(2) Nos. 1, 2 and 3— Take post. Stores laid out not more than 5 yds. from the place where the gun is to be mounted. Gun mounted. Belt packed in liner. Nos. 1 and 2—Take post.	(3) One	(4) 25 seconds from command "Gun" until all Nos. are still.	(5) All points of E.G.D. correct.	(6)
No. 2 Load.	Gun mounted. Belt packed in liner. Nos. 1 and 2—Take post.	One	5 seconds from the command "Load" until No. 1 has got correct holding.	Gun correctly loaded.	
No. 3 Unload.	Gun mounted and loaded. Nos. 1 and 2—Take post.	One	5 seconds from command "Unload" until belt is correctly packed in the liner. (The lid of the liner need not be closed).	Gun correctly unloaded.	
No. 4 Dismount gun.	Gun mounted. Nos. 1, 2 and 3—Take post.	One	20 seconds from command "Gun" until all Nos. are still.	All points of E.G.D. correct.	
No. 5 To adjust the sights and lay the gun	The gun will be loaded. Three targets will be pointed out. Tangent sight lowered and set at any convenient range. Nos. 1 and 2—Take post.	Three	12 seconds from the range being ordered until No. 2 holds up his hand.	Sight set correctly and accurate aim.	No. 1 will not be informed of the order in which the targets will be given out. Different ranges will be ordered for each target.

Name of test	Conditions before test	Number of tests	Time allowed	To pass	Remarks
(1) No. 6 Traversing.	(2) Gun mounted 25 yds. from the M.G. target and loaded. No. 1 will be given an opportunity to test his clamp; but the M.G. target will not be used for this purpose. Nos. 1 and 2—Take post.	(3) Two	(4) No time limit imposed.	(5) When checked at any time to be within 15' for direction. Elevation to be correct.	(6) The test consists of traversing from right to left and from left to right. A complete row of oblique bulls will be traversed in each case. The order "Stop" will be given once, but not before the centre of the traverse has been reached. The aim will be checked after the order "Stop" and again when the end of the traverse is reached. Tapping back to correct errors is not allowed. Corrections up or down will not exceed 300 yds. One of these tests will be carried out with No. 1 wearing his gas respirator. Corrections up or down will not exceed 300 yds. The error in levelling the bubble will be ascertained by using the angle of sight drum.
No. 7 Controlled corrections: (a) Direct fire.	Gun mounted, loaded, and laid on a target. Nos. 1 and 2—Take post.	Three	8 seconds from the command "Hundred" until No. 1 presses the thumbpiece. 12 seconds from the command "Hundred" until No. 1 has pressed the thumbpiece.	Sight correctly adjusted and correctly relaid.	
(b) Indirect fire. (Elevation).	Gun mounted and loaded, dial sight attached, aiming post put out. Range drum set at any range. Angle of sight drum at zero. The bubble will be central and a correct aim laid on the aiming post. Nos. 1 and 2—Take post.	Three		Correct setting on the range drum and the bubble level to within 2 minutes of angle.	

(c) Indirect fire. (Deflection).	As in (b). Deflection drums and dial to be at zero at the beginning of each of the three tests.	Three	15 seconds from the command "Minutes" until No. 1 has retained his holding.	Correct setting on the deflection drums. Bubble central to within 2 minutes of angle. Aim correctly relaid on aiming post. Correct setting on the range and angle of sight drums. Bubble level to within 2 minutes of angle.	Corrections right or left will not exceed 4° and will always include tens of minutes. Bubble checked by angle of sight drum. Ranges ordered will be between 1,200 and 2,000 yds. Angle of sight of not more than 1° plus or minus will be ordered, and will include 5 minutes. In order that the time taken to give out the order will not interfere with the time allowed for the test, the angle of sight will be given immediately after the range.
No. 8 Laying the gun for elevation, indirect.	Gun mounted, dial sight attached. All scales set at zero. Gun approximately level.	Three	15 seconds from the command "Hundred" until No. 1 has retained his holding.		The test consists of rectifying the stoppage of all 4 guns in turn. No. 1 being tested will be warned that when he has carried out the immediate action on a gun, he will immediately double to the next gun, until the last gun is reached. Time will be taken from the command "Go" until the testing N.C.O. calls "Up," when the immediate action is complete on the last gun.
No. 9 Immediate action. Additional stores as for teaching immediate action.	4 guns will be mounted about 3 yds. apart. Stoppages set up, crank handles covered and the guns laid off the aiming mark. The testing N.C.O. at each gun will have a spare lock and clearing plug. One stoppage in each position will be set up. Special stop-	One. (Carry out immediate action on 4 guns.)	No time limit imposed. Average time used in assessing points (see remarks).	Not less than 60 points.	

Name of test	Conditions before test	Number of tests	Time allowed	To pass	Remarks
(1)	(2) pages not to be included. NOTE.—The testing N.C.O. to act as No. 2.	(3)	(4)	(5)	(6) The time taken by each individual is recorded and the average time worked out and points awarded as follows:— For every 5 seconds or part of 5 seconds below the average time add 1 point to points gained in immediate action. For 5 seconds or part of 5 seconds above the average time deduct 1 point. Total points awarded for correct immediate action carried out on each gun —20. Deductions:— Totally incorrect: 20 points. Partially incorrect: 5 points. Guns not relaid: 5 points. Incorrect aim: 2 points. Minor errors: 2 points. Not changing lock when required: 10 points.

SECTION 12.—CARRIER DRILL

Instructor's notes

Stores:—

One gun carrier complete is required for all lessons in this section. Safety precautions will be carried out before the drills begin.

The object of the lessons in this section is to teach the men the handling of the gun on the carrier. They will be taught after elementary gun drill and before advanced machine-gun handling.

The instructor will explain that although the gun will normally be used from positions on the ground, there will be occasions when it is necessary to fire the gun from the carrier.

LESSON 58.—DESCRIPTION OF THE CARRIER MOUNTING AND THE INSPECTION OF STORES

1. Explain that the shoulder-controlled mounting is provided for the engagement of opportunity targets which suddenly present themselves. It should not be used to engage targets at ranges over 600 yds. It should not be used when the carrier is on the move.

2. General description of carrier mounting.—The carrier mounting consists of a socket fixed to the engine cowl of the carrier and a shoulder-controlled gun mounting.

Explain and demonstrate:—

- How the gun is secured on the mounting.
- The purpose of the travelling stay and how it is released to free the gun.
- That the elevation and deflection of the gun are controlled by the shoulder piece, which is adjustable.
- That a depression stop is fitted to prevent bullets from striking the inside of the carrier.
- That the gun has an all-round traverse.
- That a condenser tube is fixed to the mounting and that the steam escapes into an auxiliary condenser can fitted in the carrier.
- That the gun can easily be removed from the mounting and that the mounting can be removed from the socket.

Emphasize that the traversing clamp will never be tightened when the shoulder-controlled mounting is being used.

3. Maintenance of carrier mounting

The pivot and socket of the carrier mounting will be cleaned and oiled daily to prevent rust forming from condensing steam.

The hinge nuts and bolts of the shoulder-controlled mounting and travelling stay will be kept oiled and free from grit.

Points for examination :—

- (a) Condenser tube.
- (b) Feathers on joint pins.
- (c) Chains correct.
- (d) Travelling stay.
- (e) Traversing clamp.

4. Remove the shoulder-controlled mounting and insert the crosshead of the tripod. Explain that :—

- (a) The socket on the carrier is designed to fit the pivot of the crosshead.
- (b) By tightening the traversing clamp a fixed and steady mounting is obtained.
- (c) The condenser tube is inserted into the condenser can in the front left-hand compartment.
- (d) This mounting may be used, when the ground is suitable, for engaging targets at all machine-gun ranges.

5. Show how the gun can be stowed in the fitting provided in the right-hand rear compartment of the carrier.

6. Point out the following :—

- (a) Ammunition racks.
- (b) Spare parts case.
- (c) Condenser can and tube.
- (d) Box for M.G. gloves.
- (e) Spare barrel and cleaning rod.

7. Show how the gun numbers are seated in the carrier : No. 1 and the driver in front ; No. 2 in the near-side rear compartment ; No. 3 in the off-side rear compartment.

Explain that any of the carrier personnel must be prepared to act as the firer, according to the position of the target in relation to that of the carrier.

8. Explain that the serviceability of stores and equipment is the responsibility of the senior number in each carrier. Frequent inspections will be made to ensure that all stores are complete and in good order. An inspection will invariably be made as soon as is practicable after coming out of action.

The responsibilities of each gun number are as follows :—

No. 1 will inspect the tripod to see that the elevating and crosshead joint pins are properly in position and turned down, both elevating screws equally exposed, traversing clamp sufficiently tight to prevent

the crosshead from swinging round when the tripod is being carried, crosshead over the rear leg, direction dial secure, and all three legs together and clamped securely. He will inspect the ground action condenser can and tube, ensuring that the can is filled, the cap screwed in position, and the filler secure. He will ensure that all dials and drums of the dial sight are at zero.

No. 2 will inspect the gun to see that the muzzle attachment and blast deflector are correctly adjusted, the condenser tube is fitted, the front cover locked, the sliding shutter open, the tangent sight set at 600, the lock in the gun and the "T" fixing pin screwed home and vertical, and the spare parts case is present. He will ensure that the carrier condenser can is secure and filled. He reports "gun correct", or otherwise, to No. 1.

No. 3 will inspect the carrier mounting ensuring that, if the shoulder-controlled mounting is being used, the traversing clamp is loosened, the condenser tube securely attached, the crosshead and elevating joint pins properly in position and turned down, there is a liner in the rack of the gun mounting, the travelling stay can be easily released, and that the shoulder-controlled mounting works freely.

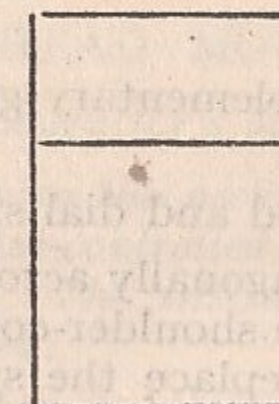
He reports "mounting correct", or otherwise, to No. 1.

LESSON 59.—MOUNT AND DISMOUNT

Instructor's note

Before the drill begins the instructor will detail three gun numbers and a driver, and give the order "Fall in". Gun numbers will take up their positions in front of the carrier as follows :—

1
2 3
Dvr.



"Mount"

Nos. 1 and 2 turn to the left and double to the near side of the carrier. The driver and No. 3 turn to the right and double to the off side of the carrier.

All numbers place a foot in their respective mounting step and, keeping as low as possible, vault into their seats and remain still.

"Dismount"

Keeping as low as possible, all numbers dismount and take up their positions in front of the carrier.

LESSON 60.—ACTION AND CEASE FIRING FROM THE CARRIER

Instructor's note

The instructor will indicate a gun position to No. 1 a few yards in front of the carrier. He will indicate the direction in which the gun will point.

"Action"

No. 1 will order **"Action"**, dismount, sling the dial sight case over the right shoulder, remove the tripod, double forward to the instructor and mount the tripod over the spot indicated.

No. 2 will disconnect the carrier condenser tube and attach the ground mounting condenser tube. He will remove the crosshead joint pin and, when No. 3 has removed the elevating joint pin, take the gun off the shoulder-controlled mounting, placing it, muzzle to the rear, diagonally across the rear corner of the armour.

He will sling the spare parts case over the right shoulder, dismount, ensure that the sliding shutter is open and double forward with the gun to No. 1.

No. 3 will remove the elevating joint pin, dismount, and remove the aiming post and two liners from the off-side rack. He will double round the front of the carrier and remove the condenser can, double forward to a point in rear of the gun position and prepare the condenser can and ammunition as in elementary gun drill.

When the stores have been removed from the carrier the actions of all numbers will be as in Lesson 48.

"Cease firing"

All numbers will act as in elementary gun drill and will take the stores back to the carrier.

No. 1 will replace the tripod and dial sight case and mount.

No. 2 will place the gun diagonally across the rear of the armour, mount, replace the gun in the shoulder-controlled mounting, attach the carrier condenser tube, replace the spare parts case and take up his position in the carrier.

No. 3 will replace the condenser can, the aiming post, the liners, and mount.

All numbers, when their duties have been completed, will remain still in their positions in the carrier.

LESSON 61.—EMERGENCY ACTION (SHOULDER-CONTROLLED MOUNTING)

Instructor's notes

When the carrier is on the move No. 1 will watch the front, Nos. 2 and 3 the flanks and rear.

If any member of the detachment sees a target he will order **"Target front (or right, or left, or rear)"**, as the case may be.

1. **"Target front (or right, or left or rear)"**

No. 1 will order the driver to stop.

No. 2 will release the shoulder-controlled mounting, lower the travelling stay, and will pass the gun to the number who is to engage the target.

The firer will take the gun, load, and fire. When the target is engaged he will order **"Drive on"** and unload the gun.

2. The following points will be emphasized:—

- (a) The gun will not be loaded while travelling, but, if part of the belt is empty, it should be passed through the feedblock to facilitate quick loading.
- (b) The man who sees the target may have to indicate it to the firer.
- (c) Personnel not firing will keep below the armour, but will be prepared to help in maintaining the gun and to fire it if necessary.
- (d) When the gun is on the shoulder-controlled mounting the traversing clamp will always be loose.

LESSON 62.—PREPARE FOR CARRIER ACTION (CROSSHEAD MOUNTING)

Instructor's note

This drill only applies to the occasion where it is necessary to change from the shoulder-controlled mounting to the crosshead mounting on the carrier. The instructor will inform No. 1 that carrier action is to be used.

1. No. 1.—**"Prepare for carrier action"**

No. 1 will unscrew the top of the condenser can in the front of the carrier and, when the gun has been mounted on the crosshead, will attach the ground mounting condenser tube and insert it into the condenser can.

No. 2 will :—

- (a) Disconnect the carrier condenser tube and remove crosshead joint pin.
- (b) When No. 3 has removed the elevating joint pin, dismount the gun and place it on the near side of the engine cowling, muzzle forward.
- (c) Remove the crosshead from the tripod, placing it in the carrier socket, and tighten the traversing clamp.
- (d) Mount the gun on the crosshead and insert the crosshead joint pin.

No. 3 will :—

- (a) Remove the elevating joint pin.
- (b) Remove the shoulder-controlled mounting, lower the stay, and place the mounting across the rear of the engine cowling.
- (c) Insert the elevating joint pin and prepare one belt of ammunition.

Nos. 2 and 3 will load as required.

2. To change from fixed mounting to shoulder-controlled mounting the above actions will be reversed.

NOTE.—This lesson will also be practised with the carriers on the move.

LESSON 63.—TRACK REPAIR DRILL

Instructor's note

The repair of a broken track will be taught as a drill to ensure that the most rapid repair can be effected in action.

1. Action on track breaking

- (a) No. 1 orders "**Track**", dismounts, and pulls the track into position. If unable to do so alone he will order No. 2 or No. 3 to help him.
- (b) The engine of the carrier will be kept running.

2. Running the carrier on to the track

- (a) Driver locks the sprocket on the broken side.
- (b) No. 1 orders the driver to move the carrier backwards or forwards on to the track.
- (c) When the carrier has moved sufficiently far on to the track the driver switches off the engine.

3. Preparation for repairs

- (a) The **driver** takes the screwdriver from the tool box and hands it to No. 1. He removes the following tools and places them on the front of the carrier.

T.A. tool and spanner.

Track punch.

Hammer.

Pliers.

Hinge pin, washer, and split pin.

- (b) No. 1 removes the appropriate mud wing with the screwdriver and places them both on the front of the carrier.
- (c) No. 1 and No. 2, working together, undo the T.A. nuts, pull up the track preparatory to running it over the T.A. wheel, knock back the ratchet with the hammer and push the track over the T.A. wheel.

While one of them inserts the hinge pin in the track and drags it back on to the sprocket, the other eases the track forward over the T.A. wheel.

4. Track joining

- (a) The driver puts the gear lever to reverse and locks the unbroken track.

He presses the starter, releasing it when the track is in position for joining. The clutch and gear lever are not moved.

- (b) No. 1 inserts hinge pin and fixes washer and split pin.
- (c) No. 2 takes up the slack with the T.A. tool. No. 1 tightens the T.A. nuts and replaces the mud wing.

NOTES:—1. The starter motor will be used in action only. For drill purposes one of the gun numbers will use the starting handle.

2. In certain circumstances it may be necessary for one of the gun numbers to release the shoulder-controlled mounting and to be prepared to protect the stationary carrier.

3. The No. 1 will ensure that all tools are replaced in the carrier.

SECTION 13.—SIGNALS

The following signals are necessary for use in the field by machine-gun units. They will be more easily remembered if, instead of being taught in one lesson, they are introduced when the relative stage of training is reached.

1. Fire control signals

Signal (1)	Interpretation (2)	When taught (3)
No. 2 with his hand raised in line with and behind the shoulder of No. 1.	Gun ready to fire.	In E.G.D., when teaching the adjustment of sights and the laying of the gun.

NOTE.—If “wind” is ordered, No. 2 will lower his hand on receipt of the allowance. He will raise his hand again when No. 1 has made the necessary correction.

Both arms fully extended, raised from the sides to a position level with the shoulders and lowered again. This motion is repeated quickly several times.	Action.	Before and during section drill, direct fire.
Arm swung in a circular motion in front of the body.	Cease firing.	
Fire controller with his hand raised above the shoulder.	Prepare to fire.	
Fire controller's hand lowered to his side.	Fire.	
Fire controller's arm waved horizontally from side to side.	Stop.	
NOTE.—No. 2 will order No. 1 to stop.		
Fire controller uses semaphore:—		During platoon drill, indirect fire.
U 	{ Up 50 yds. or Up 10 mins.	
N 	{ Down 50 yds. or Down 10 mins.	
T 	Right 30 mins.	
L 	Left 30 mins.	

2. Field signals

(a) The following field signals should be taught before commencing section training:—

A. Platoon serjeant
or
Section commanders } To join immediate superior.

AA. All N.C.Os.—To join immediate superior.

(b) The following field signals should be taught during section drill:—

B. More ammunition required.

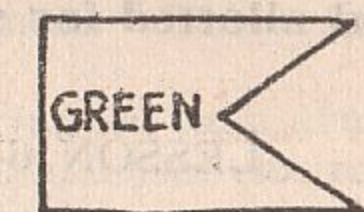
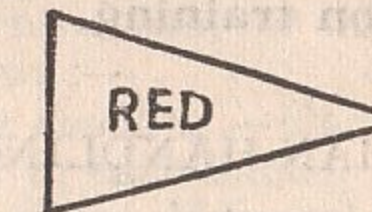
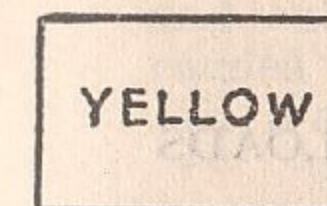
H. Carriers to come forward.

W. Water required.

3. Carrier signals

The system of signalling is by means of three flags of different colours and shapes; each colour has a basic meaning as follows:—

Yellow—“Come here”. Red—“Stop”. Green—“Go”.



(Size : 12 ins. × 18 ins.)

The colours should be bright and the material used of the naval pennant type; the stick to be of bamboo or hard wood.

The following signals are the minimum required to ensure control, but additional ones can be added where required for particular circumstances:—

Signal	Method	By whom flown
Close on me.	Yellow up and down.	All commanders.
Follow me.	Yellow and green flown.	All commanders.
Go.	Green flown.	All commanders.
Stop.	Red flown.	All commanders.
Cease firing.	Green circled overhead.	All commanders.
Carrier action.	Yellow flown.	Section commanders.
Dismounted action.	Green up and down.	Section commanders.
Carrier obstacle.	Red and Green flown.	All.
Deploy.	Green waved side to side.	All commanders.
“Out of action”.	Yellow and red flown.	All.

All signals, except “out of action”, will be acknowledged by each carrier.

The following signals for control of the individual carrier may be given by No. 1 to the driver :—

Stop—Hand horizontal with thumb turned down.

Go—Forward movement of hand.

Right or Left turn—Hand moved in a semi-circle in appropriate direction.

Slow down—Hand moved up and down.

Speed up—Clenched fist moved up and down.

Start up—Arm turned in circular motion in front of the body.

Switch off—Arm waved horizontally across the body.

SECTION 14.—ADVANCED MACHINE-GUN HANDLING

The object is to adapt the lessons taught in elementary gun drill as far as possible to service conditions.

This subject provides an essential link between drills and collective training, and should be taught to the men as soon as they are proficient in elementary gun drill. It should be practised again within each section at the beginning of the period allotted for section training.

LESSON 64.—MAN-HANDLING OF LOADS

Instructor's notes

Stores (for all lessons in this section) :—

Gun, tripod, condenser can, condenser tube, six ammunition liners with belts and dummy cartridges, spare parts case ; all to be at service weights.

1. Explain and demonstrate

The methods of carrying the gun, tripod, etc., taught in drills are not always the most convenient for carrying any distance, or when concealment from ground observation is necessary. Any comfortable method may be adopted, which does not damage the load, and conceals from the enemy the nature of the load carried. The following methods are suggested :—

(a) *Tripod*

(i) *Walking or doubling.*—Under the arm or in front of the body, or on the back with one front leg over each shoulder. In the latter case, a liner can be carried slung on each of the front legs.

(ii) *Crawling.*—Any convenient method. The tripod may be dragged along the ground provided that the dial is not damaged.

b) *Gun*

(i) *Walking or doubling.*—Across the body, barrel casing resting on the right forearm, left hand gripping the left traversing handle and free end of the condenser tube.

OR

Close to the right side with the muzzle pointing upwards. It will be held at the crosshead bracket with the right hand, and the free end of the condenser tube may be pushed through the traversing handle.

(ii) *Crawling.*—The man will lie on his right side, head to the front, weight of the body supported on the right elbow, right knee bent. He will support the gun with the barrel casing resting on the right forearm, the breech casing on the inside of the right thigh. He will grasp the left traversing handle with the left hand, which will also hold the free end of the condenser tube. He will crawl forward, making use of his right elbow and left leg.

(c) *Ammunition liners and condenser can*

The maximum load for a man is three ammunition liners and one condenser can, or four liners. They may be carried as follows :—

(i) *Walking or doubling.*—One liner under each arm, and one liner in each hand. The condenser can may be carried instead of one of the liners.

(ii) *Crawling.*—Any convenient method may be adopted. A suggested method is that the handle of a liner may be hung over the toe of the man's boot. By this method the man can crawl on his side with one liner on each foot and with the condenser can in one hand.

(d) *Two-man load*

(i) The gun will be unloaded before this drill is carried out.

(ii) If it is required to move a gun and tripod, which have already been mounted, a short distance to a new position, the whole may be carried by two men as follows :—

No. 1, right hand on the rear leg, left hand, containing ammunition liners, on the left front leg.

No. 2, left hand on the right front leg, condenser can in the right hand.

(iii) The gun mounted on the tripod can be moved by two men crawling forward, each grasping a front leg.

2. Practise squad.

LESSON 65.—TO MOUNT THE GUN ON EXPOSED GROUND

1. The instructor will explain to the men that the mounting taught to them during drills is not always the most suitable under service conditions, owing to the necessity for concealment and the unevenness of the ground.

2. Explain and demonstrate:—

(a) Mounting and dismounting the tripod:—

(i) *To mount the tripod.*—No. 1 crawls forward with the tripod, placing it over the spot indicated. Keeping as low as possible on the left of the tripod, with his head to the front, he loosens the jamming handles of the two front legs and opens them by rocking the tripod first to one side and then to the other. He adjusts the rear leg so that when the tripod is mounted it will be at its minimum height.* He raises the tripod until the socket is upright and clamps up the front legs. It may be more convenient when mounting the tripod to adjust each front leg separately, rocking the tripod as described above.

An alternative method of mounting the tripod.—Before giving the order "Mount gun", No. 1 will be told to set the rear leg at an angle suitable for the selected gun position. In addition, the two front legs will be swung forward and upward and clamped in a suitable position over the rear leg.

(ii) *To dismount the tripod.*—No. 1 will loosen the front and rear leg jamming handles, and adjust the rear leg to the sitting position. He will close the legs together, tighten up all jamming handles, and replace the tripod.

(b) Mounting and dismounting the gun and tripod:—

(i) *To mount the gun.*—No. 1 removes the elevating and crosshead joint pins. No. 2 crawls forward with the gun, timing himself to arrive at the position when No. 1 has prepared the tripod as described above. Together they will mount the gun on the

* In obtaining the minimum height, it will be found with most tripods that a firm mounting cannot be obtained by closing the rear leg right up to the socket. It will usually be necessary to adjust the rear leg one tooth back from the socket.

tripod. (See Plate 12). No. 1 will drive in the crosshead joint pin and turn the handle down; he will then swing round, keeping as low as possible, and will lie with his legs to the front, right leg crossed over the left, his back and neck supported by No. 2. No. 2 will insert the elevating joint pin and then lie on his right side, supporting No. 1 in the back with his right thigh, and at the neck with his left knee. (See Plate 13.)

No. 3 will prepare the ammunition liners. He will not unscrew the cap of the condenser can. He will crawl forward only far enough to place his stores within reach of the No. 2, screening himself behind the Nos. 1 and 2 as much as possible. No. 2 will place the stores in their correct position, unscrew the cap of the condenser can, and insert the tube.

(ii) *To dismount the gun.*—No. 3 will crawl forward to a position in rear of the gun to take the ammunition liners and condenser can, which have been handed back by No. 2, who will first have pressed down the lids of the liners and replaced the cap of the condenser can. He will then crawl clear of the position.

Nos. 1 and 2 will then either crawl back, dragging the mounted gun, and dismount it under cover; or they will dismount it as follows:—

No. 1 will remove both pins, and, after No. 2 has removed the gun, replace them. He will then swing round, keeping as low as possible, and dismount the tripod as described above.

No. 2 will remove the gun and crawl clear of the position.

(c) Mounting and dismounting the gun with crosshead attached to the gun.

The duties are the same as those described above, with the following exceptions:—

(i) *To mount the gun.*—No. 1 will ensure that the traversing clamp is unclamped. He will clamp up the left front leg only and then he will release the tripod with the right front leg unclamped.

Nos. 1 and 2 will mount the gun, inserting the pivot into the socket.

No. 2 will tighten the traversing clamp.

No. 1 will place his hand over the barrel casing and will pull towards him until the socket is upright. He will then order No. 2 to tighten the right jamming handle.

- (ii) *To dismount the gun.*—No. 2 will loosen the right jamming handle, allowing the mounting to subside. He will unscrew the traversing clamp and, helped by No. 1, will remove the gun, crawling back a few yards with it.

No. 1 will turn round, with his head to the front, and help No. 2 to remove the gun with the crosshead attached. He will then complete dismounting the tripod, crawling back with it a few yards.

LESSON 66.—TO MOUNT THE GUN ON UNEVEN GROUND

Instructor's notes

During the demonstration of dismounting the tripod, as soon as the mounting is behind cover, allow the squad to view the mounting as it appears on level ground. This will enable them to visualize how the legs could have been adjusted beforehand for that particular gun position.

Explain that movement at the gun position can be avoided if the tripod legs are adjusted under cover to suit the ground.

1. Gun positions should be chosen on ground suitable for demonstrating the gun firing:—

- (a) On the side of a slope (for firing in any direction).
- (b) On the top of a narrow bank, with the object of obtaining maximum command.
- (c) On the side of a bank, with the barrel casing just clear of the top.
- (d) Through a hedgerow.
- (e) From a shell hole, or broken ground.

2. Explain and demonstrate:—

- (a) Mounting the gun by adjusting the tripod legs to suit the conformation of the ground at the gun position.
- (b) The moving of the gun and tripod to a position behind cover before the gun is dismounted.
- (c) The method by which a gun may be mounted on the tripod behind cover, and then moved forward to the gun position.

3. In examining each mounting the instructor will point out that the following conditions must be fulfilled:—

- (a) The mounting must be as low as possible consistent with obtaining a view of the arc of fire and the target.
- (b) The position of the rear leg is governed by the shape of the ground, irrespective of the direction in which the gun has to fire. When mounted on a steep slope the rear leg should be pointing down the slope.
- (c) The socket must be mounted upright, and over the spot indicated.
- (d) The shoes only, and not the legs, must be bearing on the ground.
- (e) The ground supporting each shoe must be sufficiently firm to ensure that the shoe does not slip during firing.
- (f) No part of the tripod must interfere with the elevating wheel.

LESSON 67.—TO BRING THE GUN INTO ACTION, AS PART OF A SECTION, MAKING USE OF COVER

Instructor's notes

Additional stores:—

One universal carrier.

Equipment will be worn.

1. Explain that the object of this lesson is to practise bringing the gun into action with the minimum exposure to enemy observation and the maximum cover from fire. The importance of these points will be emphasized.

2. Describe briefly the methods by which a section commander may bring his guns into action (Sec. 22).

3. Explain that good team work within the section is essential. It is only when all members of the section work in complete harmony with the section commander that a high degree of efficiency can be achieved.

4. Decide previously on:—

- (a) A target or arc of fire, or both.
- (b) The ground from which the gun can engage it.
- (c) The ground from which the enemy can observe.
- (d) The nearest point to the gun position to which the carrier can come under cover.

5. Assemble the gun numbers at this point behind the gun position. Explain the situation regarding enemy observation, etc., and then order them into action, using one of the methods in Sec. 22, detailing a man to act as section commander's driver if necessary.

6. When the gun is in action, discuss the following :—

- (a) Ability of the gun to do its task.
- (b) Suitability of the mounting for the ground.
- (c) Position of the stores at the gun.
- (d) Position of No. 1 with regard to concealment and freedom of action.
- (e) Position of No. 2 with regard to :—
 Concealment.
 Ability to observe signals from the fire controller.
 Attention to his duties at the gun.
 Assisting in immediate action.
- (f) Position of No. 3 with regard to concealment, local protection, and his duties in action.
- (g) Method of mounting the gun without undue exposure.
- (h) The move forward of the gun numbers with regard to concealment and time.
- (i) Action of the **driver**.
- (j) How the gun position adopted could be improved by the use of camouflage or by digging.

7. In this lesson practice will be given in fire discipline (direct fire), the maintenance of the gun in action, and in the complete duties in the occupation of a gun position.

LESSON 68.—TO BRING THE CARRIER INTO ACTION IN A "HULL DOWN" POSITION

1. Explain that the tactical situation, the time available, and the presence of cover, are factors which decide whether the carrier mounting shall or shall not be used in preference to the ground.

2. Explain the importance of bringing the carrier into a "hull down" position so that only the head of the firer and the barrel of the gun are exposed to the enemy. Emphasize that good team work between the **driver** and the No. 1 are essential to ensure that the orders of No. 1 are immediately complied with and that there is no undue exposure of the carrier owing to misunderstanding or slow reaction to orders.

3. The most common fault in coming into a "hull down" position is to bring the carrier too far up the crest. No. 1, when the carrier approaches the top of the crest, will order the **driver** to turn the carrier round and back it slowly up towards the top of the crest. No. 1, observing at gun height, will order the carrier to stop as soon as he can see the target.

It will normally be most convenient if the gun points over the rear of the carrier, No. 1 fires the gun, and the carrier is positioned so that it is at an angle to the target; this ensures that the maximum protection is obtained from the armour. It is also the most comfortable firing position and facilitates the maintenance of the gun in action.

No. 1 must ensure that the carrier is concealed as much as possible from all points of enemy observation as well as from the target.

4. Decide previously on :—

- (a) A target or arc of fire, or both.
- (b) The position from which the gun, mounted on the carrier, can engage it in a "hull down" position.
- (c) The ground from which the enemy can observe.

5. Explain the situation regarding enemy observation, etc., and then order No. 1 to bring the carrier into action in a "hull down" position.

6. When the gun is in action, discuss the following :—

- (a) Ability of the gun to do its task.
- (b) The "hull down" position chosen, with particular regard to concealment.
- (c) No. 1's control of the carrier during the move forward.
- (d) The actions of the **driver**.
- (e) The actions of the **gun numbers** in preparing for carrier action.

7. All numbers should be practised in the duties of No. 1.

SECTION 15.—VEHICLES

LESSON 69.—LOADING CARRIERS

The distribution of loads conforms to the fittings and permissible pay load of the carriers. There is no fixed drill for packing the carriers, but it is the duty of the personnel in each carrier to ensure that the stores are complete, clean, serviceable, and correctly loaded.

The drills described in this pamphlet are based on the distribution of loads and personnel shown in this section.

Instructor's Notes

Stores :—

Four carriers

Complete stores to load :—

Platoon commander's carrier.

Platoon serjeant's carrier.

Section commander's carrier.

Gun carrier.

1. Platoon personnel and their personal weapons are distributed as follows :—

(a) Platoon commander's carrier :—

1 Platoon commander (Pistol)
2 Driver operators (2 rifles)

(b) Platoon serjeant's carrier :—

1 Platoon serjeant (Rifle)
1 Batman (Rifle)
1 Driver mechanic (Rifle)

(c) Each section commander's carrier :—

1 Section commander (serjeant) (Rifle)
1 Rangetaker (Machine carbine)
1 Driver mechanic (Rifle)

(d) Each gun carrier :—

1 Corporal (No. 1)
2 Gun numbers
1 Driver mechanic } (4 Rifles)

(e) Motor cycle :—

Platoon orderly (Machine carbine)

2. Each vehicle will be loaded in turn and the squad will be practised. For details of loads, see para. 4 below, and Plates 16 to 21.

3. Boxes, instrument, will contain the following stores :—

Platoon commander's :—

1 Director (in case).
1 Screw clamp, checking traverse.
2 Cases, batteries and bulbs.
2 Bulbs.
2 Batteries.
2 Lamps, electric.
1 Protractor, resector (in case).

Section commander's :—

1 Case, battery and bulb.
1 Bulb.
1 Battery.
3 Lamps, electric.
2 Pins, crosshead joint.
2 Chains, crosshead joint.
2 Pins, elevating.
2 Chains, elevating.

4. The following stores are carried in the carriers :—

Stores	Platoon commander's carrier	Platoon serjeant's carrier	Each section commander's carrier	Each gun carrier
Vickers .303 M.G. ...	—	—	—	1
tripod ...	—	—	—	1
Dial sight (in case) ...	—	—	—	1
Condenser can ...	—	—	1	2
Condenser tube ...	—	—	—	1
Spare parts case ...	—	—	—	1
Spare parts box ...	—	—	1	—
Aiming post ...	—	—	—	1*
Aiming lamp ...	—	—	—	1*
Spare barrel ...	—	—	—	1
Cleaning rod ...	—	—	—	1
Case, cans oil ...	—	1	—	—
Spare posts ...	—	—	4†	—
Instrument box ...	1	—	1	—
Stand, director ...	1	—	—	—
Rangefinder ...	—	—	1	—
Megaphone ...	1	—	—	—
Battle ...	1	—	—	—
"Umbrella" ...	—	—	—	1
Gloves, M.G., pairs ...	—	—	—	2
Delta, S.A.A., Mk. VIIIz ...	14	18	18	19
Alpha, S.A.A., Mk. VII ...	—	1,250	—	—
Pistol, signal ...	1	—	—	—
Cartridges, illuminating ...	6	—	—	—
" signal-red ...	6	—	—	—
" signal-green ...	6	—	—	—
P.I.A.T. ...	—	1	—	—
P.I.A.T. ammunition ...	—	6	—	—
Grenades ...	—	12	—	—
Magazines, Sten ...	—	—	8	—
No. 22 set, complete ...	1	—	—	—
Mk. V Telephone ...	2	—	—	—
40 yds. cable drum ...	1	—	—	—
Trenching tools ...	1	1	2	1
Hack saw ...	—	—	1	—
Wire cutters ...	—	—	1	—
Hatchet ...	—	—	1	—
Picka ...	1	1	1	1
Shovels ...	1	1	1	1
Carrier net, 25×12 ft. ...	1	1	1	1
Gun net, 14×14 ft. ...	—	—	—	1
Cooler No. 2 ...	1	1	1	1
Tin bleach, 7 lb. ...	—	1	—	—
Detector pads ...	2	2	2	1
Gas warning signs ...	10	10	—	—
Picka ...	3	4	3	4
Blankets ...	3	4	3	4

* In odd sub-section carrier only.

† In senior section commander's carrier only.

SECTION 16.—VISUAL TRAINING

1. The methods taught in S.A.T., Vol. 1, Pamphlet No. 2, 1942, Lessons 1 to 5 and 7 (7), must be the groundwork of the machine gunner's visual training.

Owing, however, to the fact that machine guns are fired at longer ranges than other small arms, and to the close grouping of the gun, even minor inaccuracies in indication and recognition may result in the target being missed altogether.

Further, it is often necessary to fire machine guns under conditions in which the safety of our own troops has to be considered, and in which any inaccuracy might endanger them.

For these reasons the methods taught in S.A.T., Vol. 1, Pamphlet No. 2, are amplified here.

2. **Sequence and system of training.**—The following will be the sequence of individual instruction :—

(a) *Officers and N.C.Os.* :—

Visual training.

The organization of the arc, including the use of range cards.

Indication.

Fire orders.

(b) *Gun numbers* :—

Visual training.

Judging distance up to 1,000 yds.

Recognition.

Application of fire orders.

(c) *Rangetakers and selected private soldiers* :—

Will be instructed in visual training, and elementary indication and recognition, on the same lines as officers and N.C.Os.

3. **Individual instruction of officers and N.C.Os.**

(a) *Visual training.*—Attention should be called to those features which are of particular interest to the machine gunner, e.g. positions for observation to the front and to the flanks, positions that offer a good field of fire, areas on which observation of fire is likely to be obtained, localities from which enemy attacks may develop, the visibility of skylines, etc. By such practice a necessary introduction will be obtained to the more detailed study of cover, reconnaissance, and the selection of gun positions.

Practice in the use of glasses should be combined with the above.

(b) *The organization of the arc and use of range cards.*—Instruction should be given having regard to a tactical situation. Particular attention should be paid to the choice of reference points, to the orders to be given to the range-taker, and to estimating ranges from the key ranges on a range-card.

(c) *Indication.*—The sequence of instruction will be as laid down in S.A.T., Vol. 1, Pamphlet No. 2, the instructional stores and technical methods involved being adapted to machine-gun requirements. For example, directors will be used instead of aiming rests.

(d) *Fire orders.*—As soon as a satisfactory standard of indication has been reached, officers and N.C.Os. will be practised in giving fire orders for the engagement of various targets. Landscape targets may be used in the preliminary stages. Examples of direct fire orders will be found in Part III, Sec. 24.

During the later stages of training the time taken to give out the fire order will be noted, and when necessary it will be pointed out where time could have been saved. This factor will be of particular importance in the engagement of moving targets.

The detail of fire discipline in connection with fire orders is practised in section drill, direct fire (Section 17, Lesson 74).

4. **Individual instruction of gun numbers**

(a) *Visual training.*—As in S.A.T., Vol. 1, Pamphlet No. 2, extended to suit machine-gun requirements.

(b) *Judging distance.*—The men will be taught to judge distances up to 1,000 yds. The method and sequence of instruction will be as laid down in S.A.T., Vol. 1, Pamphlet No. 2.

(c) *Recognition.*—Instruction in recognition must only be given by N.C.Os. who have reached a high standard in indication. The sequence of instruction will be as laid down in S.A.T., Vol. 1, Pamphlet No. 2, landscape targets or the miniature range being used in the preliminary stages.

During this instruction Nos. 1 will be at the guns, and on the conclusion of the indication will be ordered to lay on the point indicated.

The instructor will check the point of aim. Not more than four guns should be used at one time by one instructor.

- (d) *Fire orders.*—As soon as a satisfactory standard of recognition has been reached, the men will be practised individually in the detail of applying fire orders to the gun.

NOTE.—If conditions are suitable, the best method of getting the gun on to a target is for the section commander to lay it himself. When this method is impracticable some other method must be adopted.

LESSON 70.—INDICATION AND RECOGNITION

Instructor's notes

Stores :—

Gun, tripod, directors, graticuled glasses, slide rule.

Use a landscape target if necessary, but preferably practise on the ground.

1. **The arc of fire.**—Explain that the area of ground to be watched, and within which targets will be engaged, is known as the arc of fire. Imaginary lines from the gun position, passing through some easily defined point in the landscape in the direction required, will be used to indicate the right and left limits of the arc. Similarly a "near limit of arc" can be described, indicating that only the ground beyond this line, and within the arc, need be considered.

2. The fire controller, before indicating a target, will decide :—

- (a) What he is going to call it, *i.e.* what the target looks like to the gun number without binoculars.
- (b) The simplest, quickest, and most certain method of indication.

The method of indicating any target must always be thought out in these terms before the order is given to the gun numbers.

3. Targets may be indicated by a direct method or by using certain aids.

4. **Direct indication.**—Whenever possible the gun itself will be laid on to the point to be recognized. This is the simplest and most direct method of indication.

An instrument, for example a pointer staff, can also be used.

If the object to be indicated is unmistakable, the approximate right, centre, or left of arc can be of great assistance to denote a general direction, *viz.* :—

"Right of arc—White house."

"Centre of arc—Bright yellow patch."

5. **Indication with aids.**—The following aids may be used :—

- (a) Reference points.
- (b) Auxiliary reference points.
- (c) Last target.
- (d) Vertical clock—in conjunction with the methods mentioned above.
- (e) Degree measurement.

6. **Reference points.**—These will be prominent and unmistakable objects within the arc and should be selected in areas where targets may be expected to appear. To avoid confusion, as few reference points as possible should be used, and in a machine-gun arc they may be as far apart as 30 degrees. The reference points chosen will be given short, definite names and they will be known by all gun numbers.

7. **Auxiliary reference points.**—These may be used, in conjunction with reference points, to indicate particular targets. They should be easily recognisable and should be close to the target to be engaged.

8. **Last target.**—The last target may be used as an auxiliary reference point if it is near to the subsequent target.

9. **Vertical clock.**—The vertical clock ray is used in conjunction with the methods mentioned above. The reference point (or auxiliary reference point) forms the centre of the clock face and is named first, followed by the clock ray. The word "right" or "left" precedes the clock ray, *e.g.* "right four o'clock", "left nine o'clock". Twelve and six o'clock will not be preceded by "up" or "down".

10. **Degree measurement.**—The degree method, the degrees being measured by graticules, slide rule, or hand angles, may be used, in conjunction with the above, as an aid to indicate targets.

All personnel must know their hand angles (S.A.T., Vol. 1, Pamphlet No. 2, 1942, Lesson 7). Individual hand angles should be determined in all service positions, *e.g.* standing, sitting, lying down.

It must be remembered that, at the gun, degrees included in an indication will have to be measured by hand angles.

11. A target with width will be indicated by inserting the word "from" before the description of one end of the target, and the word "to" before the description of the other end. If the indication is difficult the words "right limit" and "left limit" may be used to indicate the flanks of the target.

Examples :—

- (a) Centre of arc—bush—from bush to right five o'clock—three degrees—tree.
- (b) Right of arc—house—left 9 o'clock—small bush—right limit—left 8 o'clock—gap in hedgerow—left 7 o'clock—faint dark patch—left limit.

12. The class will practise, officers and N.C.Os. indicating targets by the methods described above ; the men will practise recognition and laying the gun as ordered.

LESSON 71.—DIRECT FIRE ORDERS AND JUDGING DISTANCE

Instructor's note

Stores :—

Two guns, tripods, belts, ammunition liners, dummy cartridges, and, if no open country is available, a landscape target.

Field glasses and slide rule.

1. Explain and demonstrate :—

- (a) Point of aim, according to method of fire.
- (b) Overlap at ends of targets, and of beaten zones in the centre of oblique targets having a different range to each end.
- (c) Wind allowance and its effect on the point of aim before and during firing.
- (d) Length of bursts.
- (e) Rate of fire.
- (f) Action of No. 1 on the command "Stop".

2. Take examples of all types of targets, including moving targets, using various methods of indication.

3. During the indication of targets, Nos. 2 will always watch the front and follow the indication.

4. **Judging distance.**—Personnel of M.M.G. companies will be tested in judging distance regularly. If possible all objects will be natural. Otherwise artificial targets, such as camouflage screens, etc., may be substituted.

- (a) *Distances.*—Gun numbers will judge on two objects both under 1,000 yds., and not nearer than 600 yds. They will estimate one range to an object not more than 1,000 yds. away and a reasonable distance from a known range.

Subaltern officers, N.C.Os., and selected private soldiers will carry out the test for gun numbers, and in addition will estimate the ranges to two objects not farther than 2,000 yds. away and within a reasonable distance of two known ranges.

- (b) *Standards of efficiency.*—For judging distances the error should not exceed 100 yds.

For estimating distances with reference to a known range, the error should not exceed 50 yds. for ranges up to 1,500 yds. For ranges between 1,500 yds. and 2,000 yds., the error should not exceed 100 yds.

NOTE.—Known ranges from which estimations are required will be given to the nearest yard.

The ranges to objects to be estimated will be noted to the nearest 50 yds. below or above. Those being tested will be given the benefit of the doubt in assessing their standard of efficiency, e.g. a range of 1,387 yds. will be considered as 1,350 or 1,400 yds., and ranges given as 1,300 or 1,450 will be accepted as passing.

- (c) In order to pass, gun numbers must be correct within the permissible error in two of the ranges ; subaltern officers, N.C.Os., and selected private soldiers in four ranges.

SECTION 17.—SECTION DRILL

Instructor's notes

Stores :—

For all periods of section drill the two gun carriers complete are required.

Safety precautions will be carried out before the drill begins.

1. *Signals and advanced machine-gun handling will be taught before proceeding with section drill (Sections 13 and 14).*

2. **The object of section drill is to teach and exercise the personnel of the section in their duties as a fire unit employing direct fire.**

3. *In the later stages of section drill the use of cover should be introduced. Particular attention will be paid to practising N.C.Os. in the handling of the carrier.*

4. *Before the drill begins the instructor will detail two sub-sections and will order "Fall in" and "Mount".*

5. *The instructor will represent the section commander. The rangetaker will not be exercised in section drill.*

LESSON 72.—DISMOUNTED AND CARRIER ACTION

Instructor's note

The section commander will signal the carriers forward. (For drill purposes this need only be a short distance.) Six belts per gun will always be removed unless otherwise ordered by the section commander.

1. **Section commander**—"Dismounted action".—When Nos. 1 and **drivers** report to him he will:—

- (a) Indicate to the drivers the position for the carriers.
- (b) Indicate to Nos. 1 the gun positions and the direction in which the guns will point.
- (c) If necessary control the move of the Nos. 2 and 3 to the gun positions.
- (d) Move to the control post as soon as possible.

2. Nos. 1, 2, and 3 will act as in Lesson 60, No. 1 doubling forward to the section commander.

No. 3 of the odd sub-section will also remove and take forward the aiming post.

When the **driver** has brought up the remainder of the ammunition, Nos. 3 will prepare and take two more liners forward to the gun position. They will then take up a position in rear and to the flank of the gun position.

3. **Drivers** will double forward to the section commander for orders. They will return to the carrier and remove the remainder of the ammunition ordered, taking it forward to a convenient position for No. 3. They will then take the carriers to cover as ordered, ensuring that any signal from the gun position can be seen. If necessary the carriers will be camouflaged.

4. **Section commander**—"Carrier action". Nos. 1 order "Prepare for carrier action", and with Nos. 2 and 3 act as in Lesson 62. No. 1 doubles forward to the section commander.

The section commander will indicate the target and approximate position for the carriers to Nos. 1.

Each No. 1 will bring his carrier into a "hull down" position suitable for the engagement of the target.

LESSON 73.—CEASE FIRING

1. The section commander will arrange that the carriers are signalled forward on the order "Cease firing."

If aiming posts have been put out the section commander must first order "Unload"—"Clear guns"—"Remove dial sights".

If night firing equipment has been used the section commander will collect the lamps from Nos. 3 and return them to his carrier.

Drivers will bring their carriers to the same positions as in dismounted action.

2. **Section commander**—"Cease firing". Nos. 1, 2, and 3 act as in Lesson 60.

No. 3 of the odd sub-section will replace the aiming lamp in the carrier if it has been in use.

Nos. 3 will help the **driver** with the remainder of the ammunition if necessary.

Drivers will bring their carriers forward, dismount, double to the gun position, and bring back any ammunition that has been left by No. 3, replacing it in the carrier.

3. When all stores and personnel are in the carrier, **drivers** will start up the engine and move off.

LESSON 74.—FIRE DISCIPLINE

Instructor's notes

Additional stores:—

Landscape target, if necessary.

Before carrying out this stage of the drill the man must have had sufficient instruction in receiving fire orders.

The instructor will detail an arc of fire and reference points. When a satisfactory standard has been reached, the section should be exercised with the fire controller on the right of, or between, the guns and with a connecting file to relay signals.

Practice of fire orders in all forms, including the allowance for side wind, is an essential part of this drill, particular attention being paid to all points of fire discipline.

LESSON 75.—THE REPLACEMENT OF BREAKAGES

Instructor's note

Additional stores:—

Spare parts box.

1. Where the spare required is carried in the spare parts case:—
No. 2 replaces the broken part from the spare parts case. If the lock is broken and is repairable he will hand it with the wallet to No. 3.

No. 3 will carry out the necessary repair and return the lock and wallet to No. 2 at the first opportunity. In all cases, the broken part will be retained.

2. Where the spare part required is not in the spare parts case :—
The part is called for. No. 3 takes it from the spare parts box and passes it to No. 2. The broken part is returned to the spare parts box.

NOTE.—Nos. 1 are responsible that broken parts are replaced immediately the situation allows.

LESSON 76.—TO CONTINUE FIRING IN THE EVENT OF THE TARGET BECOMING OBSCURED

1. When the target is likely to be obscured for a short time only :—

(a) **Section commander :—**

“Stop”. (Nos. 1 relay on target).

“Pick up gun aiming mark”.

(b) Nos. 1 lower the tangent sight, attach the dial sight, set range to target on the range drum, level the bubble by the angle of sight drum, and pick up a gun aiming mark using the collimator.

(c) Nos. 2 put the tripod dial at zero, note gun aiming mark, range and angle of sight.

2. If the target is likely to be obscured for some time, and time permits :—

(a) **Section commander :—**

“Unload”—“Clear guns”.

No. 1 unloads and clears gun as in elementary gun drill.

(b) **Section commander :—**

“Out aiming post”.

No. 1 closes rear cover.

No. 3 puts out the aiming post centrally about 15 yds. in front of the guns.

Nos. 1 align the collimators on the aiming post.

(c) **Section commander :—**

“Load”—“Fire”.

LESSON 77.—TO CHANGE FROM DIRECT OR INDIRECT FIRE TO NIGHT FIRING AND VICE VERSA

Instructor's notes

Additional stores :—

Three lamps, one aiming lamp.

1. **Section commander.**—Orders No. 3 of the odd sub-section to bring up any night firing stores which are not already at the gun position.

2. (a) **Section commander :—**

“Prepare for night firing.”

DIRECT FIRE

Nos. 1 relay on the target, lower the tangent sights, attach dial sights with drums and dials at zero. They set the range (from the tangent sight) on the range drum and level the bubble by means of the angle of sight drum.

Nos. 2 set the dial on the tripod at zero.

No. 3 of the odd sub-section hands one of the lamps to the No. 3 of the even sub-section, and one to the section commander. Nos. 3 will take up position on the left of their guns to assist Nos. 1.

No. 3 of the odd sub-section takes forward the aiming lamp and aiming post to the gun.

(b) **Section commander :—**

“Unload”—“Clear guns”—“Out aiming lamp”.

Nos. 1 close rear covers. No. 3 of the odd sub-section will put out the aiming post centrally in front of the two guns, place on the aiming lamp, secure the box, attach the line to the switch, and bring the reel back to the section commander.

Nos. 1.—Align the collimator on the aiming lamp.

(c) **Section commander :—**

“Load” and “Fire” as required.

INDIRECT FIRE

3. Nos. 1 relay on the aiming post, and after No. 3 has attached the aiming lamp, etc., as for direct fire, Nos. 1 align the collimator on the aiming lamp.

4. To change from night firing to direct fire.

(a) **Section commander :—**

“Prepare for direct fire”—“Unload”—“Clear guns”—“Remove dial sights”—“In aiming lamp”

(b) Nos. 1 remove dial sights.

No. 3 of the odd sub-section moves out, replaces the aiming lamp in the box, and brings in the box and the aiming post. He collects the reel from the section commander and rewinds the line, replacing it in the box. He replaces the lamps with the aiming lamp in a place of safety, until an opportunity occurs for them to be returned to the carriers.

5. To change from night firing to indirect fire :—

(a) Nos. 1 check their aim on the aiming lamp.

(b) No. 3 of the odd sub-section acts as for direct fire except that the aiming post is left out.

(c) Nos. 1 realign the collimator on the aiming post.

SECTION 18.—PLATOON DRILL—INDIRECT

Instructor's notes

Safety precautions will be carried out before the drill begins.

1. *Signals. The required signals must be taught before proceeding with platoon drill, indirect. (See Sec. 13.)*
2. *As proficiency is attained, the drill will be practised making use of cover as in section drill—direct fire.*
3. *Stores required :—Each section as for section drill, direct fire.*
4. **The object of platoon drill, indirect, is to teach and exercise the platoon personnel in their duties as a fire unit employing indirect fire.**

5. *Before the drill begins the instructor will mark each gun position as follows :—*

- | | | |
|-----------|-----|--------------|
| No. 1 gun | ... | Red flag. |
| No. 2 gun | ... | White flag. |
| No. 3 gun | ... | Blue flag. |
| No. 4 gun | ... | Yellow flag. |

These flags will be 15 yds. apart laterally and will be staggered.

6. *The platoon will be formed up 30 to 50 yds. to the flank of the gun position. The senior section commander will take post at the gun position. The junior section commander will position himself so that he can direct the carriers, on arrival, to their respective flags.*

7. *The instructor will inform both section commanders of the following :—*

- Method of paralleling.*
- Pivot gun (if necessary).*
- Direction in which the guns are to be mounted.*
- Number of belts to be off-loaded (if necessary).*
- Position for the vehicles.*

8. *The instructor will detail off sections as in section drill, direct fire. He will then order, "Fall in", and "Mount".*

9. *Section commanders will acknowledge all verbal orders by raising their hand. They will repeat orders if necessary, and keep their hand raised if a repetition is required.*

The section commander who is on the flank of the gun position nearest to the platoon commander's O.P. is responsible for transmitting the orders to the guns.

10. *Throughout this section duties are allotted specifically to the senior and junior section commanders for drill purposes. In practice, however, these duties are interchangeable and the duties laid down for the senior section commander may be carried out by the commander of the section which includes the pivot gun.*

LESSON 78.—TO COME INTO ACTION

1. The **senior section commander**, standing on the gun position, will signal the carriers forward.

Carriers will be directed to their respective flags by the **junior section commander**, who will inform Nos. 1 that indirect fire is to be employed, and will indicate the vehicle position to the drivers.

2. The **senior section commander** is responsible for ensuring that the guns are mounted in the correct direction.

3. When the guns are in action each section commander will place himself on the outer flank of his own section.

4. Nos. 1.—**"For indirect fire mount gun."** (When their carrier reaches the appropriate flag).

Nos. 1, 2, and 3.—Mount their guns close to their flag, stamp in the shoes of the tripod (with the exception of the pivot gun), and attach the dial sight.

In addition, Nos. 3 of the odd sub-sections plant the aiming post centrally between the two guns of their section.

Drivers.—Assist Nos. 3 in off-loading ammunition. They take their carriers to the vehicle position.

LESSON 79.—CEASE FIRING

Instructor's note

As this lesson is taught immediately after "To come into action" it will first be necessary to have the guns loaded in order that "Cease firing" may be carried out correctly.

1. **Fire controller :—"Cease firing".**

Senior section commander.—Acknowledges the order and signals for the carriers.

Drivers.—Bring their carriers to the pre-arranged position.

2. **Senior section commander :—"Unload"—"Clear guns"—"Remove dial sights"—"Cease firing".**

Nos. 1, 2, 3, and **drivers.**—Act as in cease firing, section drill, direct fire.

The **senior section commander** collects the zero posts and flags and returns them to his carrier.

LESSON 80.—GUN ANGLE

*Instructor's note**Additional stores :—*

Two zero posts, which will be planted before the lesson begins.

1. When the guns have been mounted Nos. 1 and 2 of the pivot gun, directed by the senior section commander, will align the gun on the posts. They will move the tripod right or left until the line of sight through the collimator is in the exact alignment of the posts.

When this alignment is correct, Nos. 1 and 2 stamp in the tripod. No. 1 will recheck the line of sight and ensure that the dial and deflection drums are set at zero.

2. **The senior section commander.**—Lays the dial sight on the collimator of each gun in turn, reading the angle from the front pointer of the dial and deflection drum. He orders the appropriate angle to each gun in turn, *e.g.* :—

“Zero lines ”—“No. . . . Right (or Left) . . . Degrees . . . Minutes ”.

3. **The junior section commander** takes up his position behind the gun farthest from the pivot gun and acknowledges the order to each gun.

When the angle has been ordered to all guns he checks for parallelism. He kneels behind each gun and glances along the barrel casing. If there is a distant crest in front of the guns, the lines of fire of the four guns should be on approximately the same point. If there is a near crest, he notes where the line of fire of one gun crosses the crest in front, and makes his own appreciation from this where the others should cross right or left of it. He reports immediately to the senior section commander should any gun not appear to be parallel.

4. Nos. 1, on receipt of the angle ordered, set that angle on the dial sight and lay on the collimator of the pivot gun. When laid they reset the dial sight at zero. No. 1 of the pivot gun will be ordered to rezero his dial sight. The **senior section commander** checks the aim and dial (closing the angle).

Nos. 1 will adjust the collimator on to the aiming post.

Nos. 2 will set the tripod dial at zero.

5. **The senior section commander** reports to the fire controller—“Guns on zero lines ”.

No. 3 of the pivot gun brings in the zero posts.

LESSON 81.—COMBINATION OF DISTANT AIMING POINT AND POSTS (OR TARGET)

1. The selection of the distant aiming point will normally be the responsibility of the senior section commander, who will indicate it to the junior section commander.

The angle between the distant aiming point and the posts can be measured in two ways :—

By the dial sight of the pivot gun.

By director or compass.

2. Distant aiming point and posts (angle measured by dial sight).

(a) The guns are mounted and the pivot gun aligned as in gun angle method.

(b) The angle is measured between the distant aiming point and the posts, using the dial sight.

The senior section commander orders :—

“Zero lines ”—“All right (or left) . . . degrees . . . minutes ”.

(c) The **junior section commander** acknowledges the angle. Nos. 1 set the dial sight at the angle ordered.

Section commanders lay the guns of their own section on the distant aiming point, using the dial sight.

(d) Nos. 1 zero the dial sight and align the collimator on the aiming post.

Nos. 2 set the tripod dial at zero.

(e) The **junior section commander** will check for parallelism as in Lesson 80.

(f) **The senior section commander** reports “Guns on zero lines ” to the fire controller.

No. 3 of the pivot gun brings in the zero posts.

3. Distant aiming point and posts (angle measured by director or compass).

Guns are mounted as in Lesson 78, with the pivot gun as close as possible to the point from which the angle was measured.

Remainder of the drill as in para. 2 above, from the order “Zero lines ”.

LESSON 82.—TO PLACE THE NECESSARY ELEVATION ON THE GUN

1. **Fire controller**

“Nos. . . . (or all) . . . hundred (or fifty)—plus (or minus) . . . degrees, . . . minutes.”

OR

“Elevation (or depression).—Nos. . . . (or all) . . . degrees, . . . minutes.”

Nos. 1 act as taught in instrument instruction.

2. To check crest clearance

(a) *Near crest.*—When the gun has been laid for elevation (or depression) Nos. 1 set their tangent sights at 400 yds., and see that the line of sight over the gun foresight clears the crest. If it does not, they report to the section commander “No. . . . gun does not clear crest”.

(b) *Distant crest.*—Senior section commander.—“Check for crest clearance with sights at . . .” (For method of obtaining this range, see Sec. 25, Lesson 115.)

No. 1 sets the tangent sight at the graduation ordered and proceeds as in (a) above.

3. *Senior section commander.*—Reports to fire controller “Guns ready to load,” and also reports any gun which will not clear the crest.

Fire controller.—“Load.”

LESSON 83.—DISTRIBUTION AND CORRECTIONS

1. Fire controller

“Distribution.”

“No. . . . Nil.”

“No. . . . Right (or left) . . . degrees, . . . minutes.”

“No. . . . Right (or left) . . . degrees, . . . minutes.”

“No. . . . Right (or left) . . . degrees, . . . minutes.”

Each No. 1 sets the deflection drum to the angle ordered and taps the gun across until the collimator is on the aiming post. (He ensures that the bubble is central, using the handwheel. If not, he will centralize it and realign the collimator on to the aiming post.)

2. To tap right and left

Fire controller.—“Right and left . . . taps.”

After this order has been received, Nos. 2 indicate guns ready to fire. When all guns are ready, section commanders indicate to the fire controller.

The right section will tap first to the left, and the left section to the right, by the amount ordered.

3. To make allowance for side winds

Fire controller.—“Wind, right (or left) . . . degrees, . . . minutes.”

Nos. 1 make the necessary adjustment on the deflection drum, and tap their guns over until the lines of sight are on the aiming posts.

Nos. 2 on the wind allowance being ordered lower their hands and as soon as guns are relaid Nos. 2 and section commanders will indicate guns ready to fire.

Fire controller.—“Fire.”

Section commanders and Nos. 2 lower their hands, Nos. 2 ordering “Fire”, if necessary.

Fire controller.—“Stop”.

Section commanders and Nos. 2 repeat “Stop”.

4. Corrections during firing

Any corrections during firing, given by the fire controller, must first be acknowledged by the section commander on the flank nearest to the O.P. before being given to the guns.

(a) *Direction*

Fire controller.—“Stop”—“All right (or left) . . . degrees, . . . minutes”—“Go on”.

Nos. 1 act as taught in elementary gun drill, controlled corrections, indirect.

(b) *Elevation*

Fire controller.—“Stop”—“All up (or down) . . . hundred (or fifty)”—“Go on”.

OR

“Stop”—“All up (or down) . . . minutes”—“Go on.”

Nos. 1 act as taught in controlled corrections, indirect.

(When a downward correction is ordered, they will re-check for crest clearance.)

LESSON 84.—TO ENGAGE A NEW TARGET

1. Fire controller.—“Stop. All on zero lines.”

Nos. 1 set their dials and deflection drums at zero and relay on the aiming posts.

Nos. 2 check the tripod dial to see that it is at zero.

2. Fire controller.—“All—right (or left) . . . degrees . . . minutes.”

Nos. 1 set their dial sights to the angle ordered and relay on the aiming posts.

3. The fire controller orders elevation as in Lesson 82.

Nos. 1 perform their duties as in Lesson 82.

LESSON 85.—FIRE CONTROL CHARTS

*Instructor's note**Additional stores :—**Four fire control charts, two watches.*

1. The guns are placed on zero lines by any method previously taught. When guns are paralleled the fire controller calls for section commanders and issues the fire control charts.

Section commanders explain the charts to Nos. 1 where necessary.

2. **Fire controller :—“Load ”—“Prepare for Task 1 ”.**

Nos. 1, when their guns are ready to fire, report to the section commander, who in turn reports to the fire controller, “No. . . . section ready to fire ”.

3. **Fire controller :—“Fire ”.**

The section commander will control the rate of fire and lifts, etc., as shown on his chart.

Where time is allotted for points during firing on the fire control charts, section commanders must see that this time is not exceeded.

SECTION 19.—SECTION DRILL—NIGHT FIRING

*Instructor's notes**Stores :—*

Two guns, two tripods, two spare parts cases, two condenser cans, two condenser tubes, two dial sights, one aiming lamp, one aiming post, twelve liners, belts and dummy cartridges.

The section commander and the Nos. 1 will be in possession of lamps.

Safety precautions will be carried out before the drill begins.

The object of section drill, night firing, is to teach and exercise the section personnel in their duties as a fire unit by night.

LESSON 86.—TO COME INTO ACTION

*Instructor's notes**Additional stores :—*

Two sub-section carriers, two gun flags, two direction pegs, two zero posts.

The flags, pegs, and posts should be in position before this drill begins.

Direction pegs will be improvised.

1. **Senior No. 1 :—“Prepare for night firing ”.**

Nos. 1, 2, and 3 will act as in Lesson 60, carrier drill.

No. 3 of the odd-numbered sub-section removes the aiming lamp.

Drivers remove the remainder of the ammunition ordered, handing it to the Nos. 3.

Gun numbers will remain with their equipment, in file in front of the carriers.

The senior No. 1 is responsible that the necessary stores have been removed from the carriers. He will then detail loads, using one driver if necessary, and move the section forward to a position in rear of the gun flags.

2. Each No. 1 reports to the section commander, and is shown the gun flag of his gun, the direction of the rear leg, and the direction of his direction peg and zero post.

3. **Nos. 1 :—“No. . . . gun, for night firing—mount gun ”.**

Nos. 1 and 2.—Mount their guns as in platoon drill, indirect, approximately over the gun flag. The shoes of the tripod are not stamped in.

Nos. 3.—When called for by Nos. 1 will carry out their duties as in Elementary Gun Drill—“Mount gun ”. Taking all ammunition to the gun, they will then position themselves on the left of the gun to assist No. 1.

No. 3 of the odd-numbered sub-section takes the aiming lamp and the aiming post to the gun position.

Nos. 1 hand their lamps to Nos. 3.

LESSON 87.—TO OBTAIN DIRECTION AND ELEVATION

1. The section commander goes to each direction peg in turn. Accompanied by No. 3 of the odd sub-section with aiming lamp and aiming post, he will place the aiming lamp as low down as possible behind the direction peg, with the peg outlined down the centre of the aiming lamp.

The No. 3 of the even sub-section will assist at the gun position.

2. **Section commander :—“No. . . . gun, direction ”.**

No. 1, assisted by No. 2, moves the gun until the line of sight through the collimator is aligned through the zero post on to the aiming lamp.

No. 1 sees that the dial and deflection drums are at zero, orders the legs to be stamped in, checks the aim and orders No. 2 to set the direction dial on the tripod at zero. He reports “No. . . . gun, correct ”.

3. The **section commander**, having given direction to both guns, will direct No. 3 to put in the aiming lamp. He will then collect the zero posts and return to his control post.

No. 3 of the odd sub-section will put in the aiming post, open the box, place on the aiming lamp, secure the box, attach the line, and bring the reel back to the section commander.

Nos. 1 will align the collimator on to the aiming lamp.

4. When the direction pegs are in rear the procedure will be as above, with the exception that when "**Direction**" is ordered the dial sight will be set at zero on the front pointer. When the aim and dials have been checked, the dial sight will be set at zero on the rear pointer before No. 1 reports "**No. . . . gun, correct**".

ELEVATION

5. **Section Commander** :—"No. . . . (or All) . . . hundred (or fifty)—plus (or minus) . . . degrees . . . minutes"

OR

"**Elevation (or Depression)**—No. . . . (or All) . . . degrees . . . minutes".

Nos. 1 act as taught in instrument instruction. They will then adjust their collimators on the aiming lamp.

Section commander :—"Load", and fire as required.

LESSON 88.—TO CEASE FIRING

1. **Section commander** :—"Unload"—"**Clear gun**"—"Remove dial sights"—"**In aiming lamp**".

Nos. 1. Remove the dial sight.

Nos. 3. Hand back the lamp to the Nos. 1. No. 3 of the odd sub-section brings in the aiming lamp and post, winds in the line and returns to his position on the left of the gun.

2. **Section commander** :—"Cease firing"

After the guns have been dismantled, the section commander will fall-in the section and check stores. He is himself responsible for the pegs, flags and zero posts.

The section will move back to the carriers, replace stores and mount as in section drill, direct fire. Each No. 1 will report to the section commander when his carrier is ready to move off.

The junior section commander will replace the zero posts and pegs in his carrier until they can be transferred to the senior section commander's carrier.

LESSON 89.—FIRE CONTROL CHARTS

Instructor's notes

Additional stores :—

Two fire control charts, two watches.

The Nos. 3 will have the fire control charts.

The drill will be as already taught up to the stage of the aiming lamp being put out.

1. **Section commander** :—"Load"—"**Prepare for task 1**"
Each No. 1 reports when his gun is ready for task 1.

2. **Section commander** :—"Fire"

Each No. 1, assisted by his No. 3, controls the fire of his gun as shown on the chart.

When not actually firing on a task, guns will always be laid on the fixed line; guns will be half loaded, thumbpiece pressed, and sentries posted.

SECTION 20.—OBSERVATION OF FIRE AND RANGING

1. **Observation of fire** deals with deducing from the strike of the bullets the position of the beaten zone with reference to the target, and is a necessary preliminary to ranging.

2. **Ranging** is the process of determining by observation of fire the direction and elevation necessary to hit the target.

3. Observation of fire and ranging are normally carried out by the fire controller. In heavy fighting, where unit control may break down, control by the firer will become necessary. Except in very favourable circumstances, little reliance can be placed on observation by the firer at ranges over 800 yds. The training in ranging, therefore, is confined to ranges of 1,000 yds. and under, using the naked eye.

4. Personnel will require training as follows :—

- (a) *Officers and N.C.Os.*—To observe and correct the fire, using field-glasses when necessary.
- (b) *All ranks.*—To observe and correct fire, using the naked eye, up to ranges of 1,000 yds.
- (c) *Rangetakers.*—To observe fire, using the rangefinder, and to report the position of strike.

5. **Observation of fire**

- (a) The possibility of observation of strike will depend on a variety of factors in addition to the distance of the observer

from the target, of which the following are the most important :—

- (i) The nature of the soil round the target. Sand, plough, and water generally give good results, but damp ground, long grass, and undergrowth make observation more difficult.
- (ii) Visibility as affected by light, mist, or mirage.
- (iii) The position of the sun. When the sun is low it is easier to pick up strike than when it is high.
- (iv) Wind. A high wind tends to blow away the dust caused by the strike before it can be observed.

(b) The action of the enemy will often be a clue as to whether fire effect is being obtained, *e.g.* cessation of hostile fire, etc.

In battle, the fall of shell and the strike of bullets from other small arms near the target will interfere with accurate observation.

(c) It is a fundamental principle in observation of fire only to accept information that is definite or certain, and not to act on what is uncertain or no more than probable. Thus, before any deduction can be made regarding the exact position of a beaten zone with reference to the target, it is necessary to decide whether only a small portion of it is falling on the ground which gives observation of strike, and, if so, what portion of it.

Again, when a foreshortened view of the ground is obtained, it is possible to make errors of great magnitude if guesswork only is relied upon.

(d) In the engagement of targets with width or depth, the beaten zones of the guns of the fire unit are distributed over the target according to the method of fire employed. In these circumstances it is not possible always to determine that full fire effect has been obtained, owing to the difficulty of checking each individual beaten zone.

(e) Tracer ammunition is only of value for determining correctness of line.

(f) It must be remembered that it is necessary to observe the area in which the beaten zone is to fall, rather than the ground in the immediate vicinity of the definite aiming mark.

(g) It may sometimes happen that an area of ground close to the target is specially suitable for observation. In these circumstances it may result in quicker and more economical fire effect to direct the fire on to this area in the first instance, correcting it on to the target as soon as strike has been observed.

(h) Bursts of fire must be long enough to enable the beaten zone to be "found," as well as to produce the required effect on the target.

6. Ranging

(a) Ranging may be carried out :—

(i) To correct fire on to a target as soon as the data obtained by observation warrant it.

(ii) To register the direction and elevation required to hit a target after fire effect has been obtained.

(b) It is required to bring the centres of the beaten zones on to their correct positions on the target as soon as possible after the first burst. This task may entail corrections for elevation, or for direction, or for both.

7. The subject matter of this section should take the form of a lecture, illustrated on the sand model with the aid of models of beaten zones.

The instruction should be completed in the open country, indicating types of ground and their effects on the beaten zones, showing approximate dimensions and giving practice to officers and N.C.Os. in the use of graticules and field glasses.

The instruction to gun numbers will be confined to ranges up to 1,000 yds.

Opportunity should be taken on all occasions when ball ammunition is used to practise officers, N.C.Os., rangetakers and gun numbers in observing the strike of bullets.

LESSON 90.—OBSERVATION OF FIRE AND RANGING

Instructor's note

Stores :—

Gun, tripod, slide rule or field glasses, and prepared range card.

1. The general principles to be followed are :—

(a) **Only correct when it is certain that full fire effect is not being obtained.**

(b) When making corrections, unless the correction required can be determined accurately, **over-estimate it rather than under-estimate it**, always provided that the safety of our own troops is not involved.

2. Corrections for line

(a) Observation of machine gun fire is normally carried out from a position near the guns. From such a position it is possible to measure the exact correction required, either with graticuled glasses, slide rule, or hand angles.

- (b) Nos. 1 may correct for direction on their own initiative, provided that good strike is being obtained and provided they are sure of the position of the beaten zone. They will not correct for elevation.

3. Corrections for elevation

- (a) It is not possible to determine the exact amount by which the beaten zone is falling over or short of the target. The length of the beaten zone being known, if the whole of it is seen it will give useful guidance on the amount of correction to give, *e.g.* it might be estimated that the distance between the beaten zone and the target is either once or twice the beaten zone as seen on the ground.

- (b) It should be remembered that where a fore-shortened view of the ground is obtained, the tendency will be to under-estimate the correction required.

As a rule, therefore, bold corrections should be given, particularly where there is no guide to the amount required.

The object is to include the target in a bracket rather than to creep towards it by inadequate corrections.

The actual manner in which corrections are given and acted upon will be found in Sec. 11, Lesson 55.

4. When fire is being observed from a flank, the fact that bullets appear to be falling behind or in front of the target, as viewed from the observation post, will give definite indications as to whether a right or left correction is required.

Again, bullets which are falling on the correct line gun-target will appear from the observation post to be right or left of it. In these circumstances, to ascertain the actual position of bullets with reference to the target, it is necessary to visualize the line gun-target on the ground and judge accordingly.

NOTE.—Gun numbers will be required to judge the range to targets up to 1,000 yds., officers and N.C.Os. up to 2,000 yds.

5. Method of instruction

(a) Elevation.

- (i) Indicate a target to the firer and tell him to estimate the range.
- (ii) Using his estimated range, give a fire order to bring fire to bear on this target.
- (iii) Indicate the position on the ground where his bullets would fall, according to whether he has over or under-estimated the range.

If this position is very difficult to indicate, lay the gun on it.

- (iv) The firer now judges the correction required, adjusts his tangent sight accordingly, relays on the target and continues firing.
- (v) If he has not made a suitable correction, indicate where the bullets are now falling.
- (vi) Continue as above until it is considered that he has brought fire to bear on the target.
- (vii) The firer now reports the correct range to hit the target.

(b) Direction.

- (i) Give a fire order to engage any suitable target.
- (ii) Indicate the supposed position of the shots right or left of the target.
- (iii) The firer deflects his line of sight, to the left or to the right of the target, by the amount the shots fell right or left of it originally.
- (iv) Check the line of sight. Inform the firer that the shots are hitting the target, or, if the firer is in error, indicate a fresh point of strike and continue as above until the suitable correction has been made.
- (v) The firer now notes his point of aim.

- (c) *Direction and elevation combined.*—The firer will be required to obtain the correct elevation to hit the target, and to indicate a gun aiming mark which will give the necessary deflection right or left of it.

NOTE.—This lesson will be carried a stage further with officers and N.C.Os.; the instructor will indicate the supposed position of the shots from a section or platoon of guns, and the fire controller under instruction will give the necessary correction to bring the fire on to the target.

SECTION 21.—HEADQUARTERS TRAINING

1. The object of headquarters training is to train the personnel of section and platoon headquarters in their duties in the field by day and night, under varying conditions and on different types of ground.

2. The training will be carried out with such personnel as are necessary for any particular exercise, selected from the following:—

<i>Platoon headquarters.</i>	<i>Each section.</i>
1 platoon commander.	1 section commander.
1 platoon serjeant.	2 Nos. 1.
1 orderly.	1 rangetaker.
2 carrier drivers.	1 carrier driver.

3. The platoon commander can combine the command of his platoon with directing the exercise.

Gun numbers and machine-gun equipment are not required. Carriers may or may not be taken out according to the exercise, at the discretion of the directing officer. The rangefinder will invariably take his instrument when exercises are carried out on the ground. Platoon and section personnel taking part will be required to function correctly, and to issue the necessary orders based on the tactical situations as pictured by the directing officer.

4. As a preliminary to headquarters training exercises, commanders will be practised in the following :—

- (a) Reconnaissance of section areas.
- (b) Reconnaissance of indirect fire positions.
- (c) Procedure in occupation and evacuation of positions.
- (d) Issue of orders.

NOTE.—These can usefully be carried out in the form of tactical exercises without troops.

5. In the preparation of an exercise :—

- (a) Decide on the main lessons to be taught.
- (b) Select suitable ground or prepare a sandtable.
- (c) Produce simple tactical situations which will bring out the lessons to be taught.
- (d) Make sure the orders issued are clear, and in themselves a lesson in the issue of verbal orders.

6. In conducting the exercise :—

- (a) Assemble personnel taking part where the exercise starts.
- (b) Explain situations and issue any necessary orders.
Personnel then act in accordance with the situation, and issue orders if necessary.
- (c) Criticize actions and orders.
- (d) Issue subsequent situations, criticize actions and orders at each stage.
- (e) When necessary, the conducting officer will represent gun numbers for the purpose of receiving instructions.

SECTION 22.—BATTLE DRILLS

Instructor's notes

Method of instruction :—

1. The subject matter of each lesson should take the form of lectures.

2. The duties in each lesson should be further explained with the aid of a prepared sandtable.

3. Headquarter training exercises or T.E.W.Ts. should be carried out on the ground with the personnel required for any particular phase.

4. The duties of all commanders will be further practised in section and platoon training exercises, where all personnel and equipment will be employed. Technical as well as tactical problems should be included in these exercises.

During these exercises fire orders should be practised upon a natural landscape.

M.M.Gs.—GENERAL

LESSON 91.—INTRODUCTORY

1. Machine-gun fire will normally be required as part of a co-ordinated fire plan. The preliminary arrangements to bring platoons into action, therefore, will usually be made by the machine-gun company commander. In the event of a platoon being placed under command or in support of a battalion, however, the platoon commander will be responsible for the deployment of his platoon in accordance with the battalion commander's requirements.

2. The following duties, although referring primarily to the machine-gun company commander, will apply equally in principle to a platoon commander who is temporarily under command or in support of a battalion.

3. To ensure the minimum of delay in the production of fire, the following preliminary arrangements are necessary :—

(a) *Warning order.*—This will be issued as soon as possible after the company commander has received his orders. It will include :—

(i) Rendezvous for platoon commanders to receive orders.

(ii) Deployment areas for the platoons.

(b) As detailed a reconnaissance for platoon areas as time permits.

(c) Orders to platoon commanders which will include :—

Information.

Intention.

Platoon role.

Area.

Tasks in detail.
 Timings.
 Ammunition to be expended.
 Administration.
 Intercommunication.

4. The duties of a platoon in the field are dealt with in the lessons that follow. The details of battle drill and occupation of positions will depend on the orders given by the company commander.

The platoon area in general will be selected by the company commander, who will satisfy himself that the task can be carried out from that area. The detailed reconnaissance of the area must, however, normally be the platoon commander's responsibility. The time factor may make it impossible for the platoon commander to carry out a detailed reconnaissance of both section areas himself. In this event he will be compelled to decentralize this responsibility in some measure to section commanders.

5. The platoon commander, when direct fire is being employed, will direct the fire of his two sections, fire being controlled by the section commanders.

The means of communication at the disposal of a platoon commander for directing the fire of his platoon is by telephone, orderly, or signal. All these methods impose certain limitations, and, as a guide, it is considered that where a platoon is required to fire over one arc, the two sections should not be farther apart than about 300 yds. To minimize the chances of being neutralized and to assist concealment, they should not be closer than about 100 yds.

6. The platoon commander, in deciding whether he will order one arc for each section or one arc for both, should remember that for ranges over 2,000 yds. the fire of four guns is normally necessary in order to get full fire effect. Therefore, when targets over that range have to be engaged, they must be included in the arc of each section.

7. Direct fire will be the normal method of fire employed because it is the simplest, most effective, and most flexible means of engaging targets. It is particularly devastating when applied in enfilade at close ranges, and the effect of fire can be observed.

8. Indirect fire positions provide concealment from ground observation but limit flexibility and prevent the engagement of two targets simultaneously. They should only be used when the situation makes it impossible or inadvisable to occupy direct fire positions, at night, or for certain harassing fire tasks.

9. The universal carrier is mobile across country and is bullet proof against rifle fire only. It affords no protection against any

form of armour-piercing bullet, and is vulnerable to plunging fire. It should, therefore, be used primarily as a means of conveying the gun from place to place, and in no circumstances must it be employed as an armoured fighting vehicle.

10. Guns will normally fire from ground positions, although in certain circumstances, when the ground is suitable and speed into and out of action is a primary consideration, it may be desirable to fire guns from carriers in "hull down" positions, using the crosshead or, at short ranges, the shoulder-controlled mounting.

The shoulder-controlled mounting on the carrier is for local protection and for engaging targets at short ranges which suddenly present themselves. It is not possible to engage targets effectively while the carrier is moving.

11. The procedure for reconnaissance and occupation that follows is a basic drill designed to meet normal battle conditions. In many situations modifications will be necessary, and the commander must decide, in accordance with the situation, whether he can dispense with any detail or alter procedure.

LESSON 92.—RECONNAISSANCE OF SECTION AND PLATOON AREAS

1. In direct fire, the reconnaissance of the platoon area is the responsibility of the platoon commander, but the gun positions are selected by section commanders in accordance with the platoon commander's orders.

In indirect fire, the selection of the "gun position" is the responsibility of the platoon commander.

Unless he receives definite orders, the platoon commander, before carrying out his reconnaissance, will decide whether he will occupy a direct or indirect position and whether to fire from the ground or from the carrier.

2. Direct fire positions.

(a) The platoon commander reconnoitres the platoon area for :—

- (i) Section areas and rendezvous.
- (ii) O.P.
- (iii) Platoon headquarters.
- (iv) Positions for vehicles.

(b) The following are the requirements of section areas :—

- (i) Suitability for the task.
- (ii) Ability to observe the movements of our own troops.
- (iii) Covered approaches.
- (iv) Concealment for guns.
- (v) Position for vehicles.

- (c) The platoon commander's O.P. should have good command of any particular targets given, of the arc of fire, and of the line of advance of our own troops. It should have cover from view, cover from fire, a covered approach, and accommodation for the required number of men.

Whenever possible it should be sited near one section commander's control post and in line communication with the other section commander. This will enable the platoon commander to give fire direction orders to one section by voice, and to the other by telephone.

- (d) Platoon headquarters should be sited to ensure ease of communication between sections and O.P. It should have cover from fire, a covered approach, and, when possible, concealment from the air. If necessary, the remote control unit of the No. 22 set may be established at, or just in rear of, the O.P. to facilitate communications between company H.Q. and the platoon commander.

- (e) Positions for vehicles will be chosen in rear of and, if possible, in sight of the gun positions. Cover from fire and concealment from air are essential. If necessary vehicles will be camouflaged.

- (f) The section commander reconnoitres for gun positions and a control post in the area indicated by the platoon commander. In selecting these, the section commander will consider the points detailed in sub-para. (b) above.

- (g) Gun positions, whenever possible, should have cover from fire, view, and air, and, to facilitate maintenance of the gun in action, should have a covered approach.

- (h) The control post should conform to the requirements of an O.P., with the following additions:—

- (i) Sufficient concealment to enable fire control signals to be made.
- (ii) Within voice control and preferably to the left of the guns.

- (i) Guns firing from carriers in "hull down" positions can present as small a target as guns mounted on the ground, but are very visible from the air. In selecting "hull down" positions, observation from any part of the enemy position, and not only from the target area, must be considered.

Every effort must be made to avoid clearly defined crests cutting the skyline, and the importance of a background cannot be over-emphasized.

It is not possible to enumerate all the considerations that will influence a commander's decision to fire from the carriers. The necessity for speed into and out of action, dictated by the tactical situation and enemy fire, and the available cover from air and ground observation, must always be taken into account.

3. Indirect fire position

- (a) If the platoon commander decides to employ indirect fire he will reconnoitre for:—

- (i) Gun position.
- (ii) O.P.
- (iii) Vehicle position.

- (b) The gun position will have cover from fire and view, and, when possible, from air. It will be as close to the top of the crest as is consistent with safety and concealment. The carriers should be able to come up to the gun position without being observed. In addition, crest clearance will be ensured.

In choosing the gun position, the platoon commander must always bear in mind the quickest or most convenient method of paralleling afforded by the ground.

- (c) The O.P. should have good command of any particular targets given, of the arc of fire, and of the line of advance of our own troops.

It will be as close to the gun position as possible to avoid the complications that would be caused by displacement. As a general guide, it should not be more than 200 yds. in front of or behind the guns, nor displaced more than 50 yds. to either flank.

- (d) The vehicle position will conform to the requirements enumerated in para. 2 (e) above.

M.M.Gs. IN THE ATTACK

In the attack medium machine guns may be employed as follows:—

- (a) To give covering fire to the advancing troops. This task may be carried out either by observation of the advance of our own troops or on a timed programme. Guns may be given an arc in which, when their primary task is completed, they will engage by observation any enemy interfering with the progress of the attack.
- (b) To assist in consolidation. The prompt use of machine guns to assist in consolidation as soon as the objective is captured is facilitated by their mobility, and the accurate volume of fire which they are capable of producing makes them particularly valuable in this role.

On occasions guns may be used to give depth to the consolidation from their original positions.

- (c) Flank protection. Medium machine guns can give effective protection with considerable economy in force when the ground is suitable.

LESSON 93.—OCCUPATION OF A POSITION— DAY

1. Reconnaissance party

- (a) The platoon commander, when called for by the company commander either for reconnaissance or for the receipt of orders, will normally take with him a reconnaissance party consisting of both section commanders in their carriers and the platoon orderly. This entails the use of three vehicles and a motor cycle, and the platoon commander must carefully control their movement and dispositions.
- (b) When receiving orders, the platoon commander will leave his reconnaissance party behind cover and as close as possible. It will, however, be advantageous if the situation allows of one or both section commanders hearing the company commander's orders.

2. Platoon commander

- (a) When orders have been received, he will make his reconnaissance plan and decide the likely positions from which the tasks could be carried out.
- (b) He will then send a message to the platoon serjeant including :—
Position of platoon rendezvous, as near as possible to the area, or areas, to be reconnoitred.
Route to be taken.
His own actions.
- (c) He will move with his reconnaissance party to the area selected.
On arrival at the area he will decide whether to use direct or indirect fire ; ground or carrier action.
Unless there are very good reasons for deciding otherwise, direct fire from ground positions will be employed.
- (d) He makes a brief reconnaissance and decides on :—
Section areas and rendezvous.
Arcs of fire.
Position for vehicles.
Positions for O.P. and platoon H.Q.
Arrangements for local protection.

- (e) He will appreciate and solve any safety problem likely to be of immediate importance.
- (f) On completion of his reconnaissance he will issue orders to section commanders, which will include as many of the following points as may be necessary :—

Information.

Intention.

Arcs of fire (including near limit of arc, if any).

First target.

Ground or carrier action.

Section areas and rendezvous.

Factors affecting safety.

Ammunition allotted.

Position for vehicles.

Position of platoon H.Q. and O.P.

Signals to be employed.

Zero hour.

In addition, according to the situation and the time available, the following may be given initially or later :—

Arrangements for local protection.

Digging policy.

Ammunition supply.

Medical arrangements.

- (g) Section commanders, with their rangetakers, will go to their section areas and carry out their reconnaissance.
- (h) The platoon commander will be responsible for ordering sections to their respective rendezvous. He will inform them if ground or carrier action is to be employed.
- (i) He will order one of the driver operators to lay the telephone cable between his O.P. and the farthest section control post.
- (j) He will, at the earliest opportunity, give full orders to the platoon serjeant as in para. 2 (f) above, with particular reference to :—
The establishing of platoon H.Q.
Local protection.
Ammunition supply.
Position for vehicles.
- (k) Company H.Q. will be informed when both sections have been reported in action, the location of platoon H.Q. being stated.

3. Platoon serjeant

- (a) Leads the platoon to the rendezvous. He is responsible for the order of march, for local protection on the move and at the rendezvous, and for the disposition of vehicles at the rendezvous.

- (b) Organizes local protection as ordered.
- (c) Supervises the concealment and camouflage of vehicles.
- (d) Is responsible for arranging the supply of ammunition from vehicles to guns.
- (e) Will be prepared to take over the command of the platoon in the event of the platoon commander becoming a casualty.

4. Section commander

- (a) He goes to his section area in his carrier and, on arrival, decides on the point forward of which it is unsafe for the carriers to move. He tells his driver where he is going to reconnoitre and gives him any necessary orders to pass on to Nos. 1 when they arrive. If the covered position for the carrier is some distance from the gun position, the section commander will order his driver to remove the spare parts box before the carrier moves off, giving it to No. 3 of the odd sub-section.

- (b) He gives orders to his rangetaker as follows:—

Arc of fire.

Points to which he requires ranges.

Time available.

Probable position of control post.

- (c) He reconnoitres for:—

Control post.

Two gun positions.

- (d) When his section arrives he brings the guns into action by one of the following methods:—

- (i) He signals up both Nos. 1 and indicates each gun position and the direction in which the guns will point. He controls the higher numbers coming into action. He indicates the arc of fire, reference points, and first target when the guns are mounted.

- (ii) He signals up each No. 1 in turn, pointing out his gun position, arc of fire, reference points, and first target.

- (iii) He uses the driver to mark one gun position while he himself marks the other one. The guns are then signalled into action independently.

The section commander will use whichever of these methods he considers will best meet the circumstances.

- (e) When guns are to be fired from carriers in "hull down" positions, section commanders control the move forward. Nos. 1 move their carriers forward into "hull down" positions on the orders or signals of the section commander. The section commander positions his carrier so that he can control the fire of his section.

When carriers are "hull down", only the gun and the head of the firer should be in view of the enemy.

- (f) He orders the drivers to take their vehicles to the vehicle position.
- (g) He gives all information to Nos. 1 and, when his section is in action, he sends a No. 3 to report to platoon H.Q.
- (h) As soon as possible he passes on all information to the higher gun numbers.

5. Nos. 1

- (a) When the section, having been sent forward by the platoon commander, arrives in the section area, the senior No. 1 must use his initiative to help the section commander to get the guns into action with the least possible delay.

- (b) If the section commander has not completed his reconnaissance, No. 1 will obtain all possible information from the section commander's driver.

According to the situation he may decide to do any one of the following:—

- (i) Go forward himself and contact the section commander.
- (ii) Move the carriers towards the particular place where the section commander is reconnoitring.
- (iii) Order stores to be off-loaded and lead the section forward in preparation for action.

6. Duties during action

- (a) *Platoon commander*

- (i) Keeps in touch with the tactical situation, carrying out reconnaissance where necessary.
- (ii) Issues fire direction orders as required.
- (iii) Keeps in touch with company H.Q.

- (b) *Section commander*

- (i) Controls the fire of his section.
- (ii) Locates and deals with targets within his arc.
- (iii) Makes arrangements to continue firing in case observation is at any time interrupted.

LESSON 94.—MODIFICATIONS FOR INDIRECT FIRE

1. When it is decided to employ indirect fire the following modified battle drill will be used:—

2. Platoon commander

(a) On arrival in the area with his reconnaissance party he decides on the following:—

Gun position and method of paralleling.

O.P.

Position for vehicles.

(b) Orders his driver operator to lay cable between the O.P. and the gun position.

Gives orders to the rangetakers as follows:—

First target.

Any other points to which ranges are required.

Time available and place to which to report ranges.

(c) Gives orders to the section commanders and, if the platoon has arrived on the position, to the platoon serjeant, which will include:—

Information.

Intention.

Gun position.

Method of paralleling.

Pivot gun, if necessary.

Ammunition required.

Position for vehicles.

Positions of O.P. and platoon H.Q.

When fire is to be opened:

In addition, according to the situation and time available, the following may be given initially or later:—

Arrangements for local protection.

Ammunition supply.

(d) Takes a director and obtains the necessary data to engage the target. This will include some or all of the following:—

Range.

Angle of sight.

Distribution of switches necessary to engage the target.

Crest clearance.

Safety of our own troops.

(e) If the platoon serjeant has not already received orders with the section commanders, the platoon commander will give

him full orders as early as possible, with particular reference to:—

Establishing platoon H.Q.

Local protection.

Ammunition supply.

Position for vehicles.

(f) During the shoot he controls the fire of the platoon. This will normally be done by telephone.

3. Senior section commander

(a) Flags the gun positions as ordered by the platoon commander. On "Cease firing" he is responsible for returning flags and zero posts to his carrier.

(b) Selects a distant aiming point or aligns posts for the pivot gun, or does both, assisted by the junior section commander.

(c) Parallels guns on their zero line according to the method being employed.

(d) Calculates the minimum quadrant angle and ensures that guns will clear the crest.

4. Junior section commander

(a) Assists the senior section commander to prepare the gun position.

(b) Is responsible for meeting the platoon at the rendezvous and directing the carriers to their appropriate flags on the gun position.

(c) Is responsible for sending carriers to the vehicle position as ordered by the platoon commander.

5. Platoon Serjeant

(a) Reports to the platoon commander for orders.

(b) Is responsible for:—

Local protection.

Establishing platoon headquarters.

Supervising the disposition of carriers at the vehicle position.

Arranging the supply of ammunition from the vehicles to the gun position.

(c) Will be prepared to take over the duties of fire controller.

M.M.Gs. IN THE DEFENCE

The duties laid down for the occupation of a defensive position refer to the occasion when there is ample time for the occupation and full details can be attended to.

The procedure and orders will vary according to the tasks that have been allotted to platoons.

Possible tasks may be summarized as follows :—

- (a) Defensive fire tasks :— (i) Covering an arc.
(ii) S.O.S. tasks.

(b) Mobile reserve.

(c) Support of counter attacks.

(d) Harassing fire tasks.

Each platoon will normally carry out more than one of the above tasks.

LESSON 95.—DUTIES SPECIAL TO DEFENCE

1. Duties on decision to occupy a position.—In addition to the points already given in Lesson 93, para. 2 (f), the platoon commander will include the following in his orders :—

- (a) The position of our own troops in the vicinity of section areas and arcs of fire.
- (b) Approximate areas in which fixed lines are to fall.
- (c) S.O.S. signal and the action to be taken when S.O.S. signal goes up. Normally S.O.S. signals will only go up at night or when visibility is bad. Defensive fire on fixed lines will be required as soon as the S.O.S. goes up.
- (d) Rate of fire and ammunition to be used on fixed lines.
- (e) Any reservation of ammunition necessary for primary tasks.
- (f) Any special orders for local protection and concealment.
- (g) Orders regarding digging.
- (h) Intercommunication.

2. Duties during the occupation

(a) *Platoon commander.*

- (i) Having given his orders, he ascertains from rifle units near his gun positions and in the area where his fixed line fire is required to fall, the exact dispositions of their troops, so as to ensure necessary safety. He also ascertains the positions from which the S.O.S. signal will be sent up, and discusses the co-ordination of digging and wiring.

- (ii) Returns to the section positions and gives orders in detail regarding fixed lines, the positions from which the S.O.S. signal will be sent up, and any other points which may be necessary.

- (iii) Then visits nearby unit commanders and arranges to keep in touch with them.

- (iv) Decides the extent of communications necessary between his O.P. and his sections and whether to have his No. 22 set as a ground or vehicle station.

- (v) Reports his platoon in action to his company commander as soon as he receives messages from his sections.

(b) *Platoon serjeant.*

- (i) Establishes platoon H.Q. as ordered.

- (ii) Arranges local protection, including the siting of the P.I.A.T.

- (iii) If necessary, collects the carriers from each section and disposes them as ordered.

- (iv) Returns to the platoon commander and receives full information as soon as possible.

(c) *Section commander.*—In addition to the duties given in Lesson 93, para. 4, he will :—

- (i) Post sentries.

- (ii) Order the rangetaker to make out a range card for the arc.

- (iii) Order the guns to be mounted in temporary positions to cover the arc, and to be laid on temporary fixed lines until the exact position of permanent fixed lines is decided upon.

In order to obtain concealment for temporary positions it may be necessary to sacrifice a little of the arc.

- (iv) Immediately he receives details of the fixed line, have guns laid on this line (Lessons 127, 128).

- (v) Arrange for the concealment of the position and stores.

- (vi) Organize digging.

- (vii) Send the carriers to the position ordered.

- (viii) Send a No. 3 to report the section in action to platoon H.Q.

- (ix) Inform all ranks of the S.O.S. signal, the action to be taken in case of alarm, the positions of temporary alarm posts, and the details of ranges.

- (x) Select permanent alarm posts, and make out a duty roster.
- (xi) Mark in on his range card the area within his arc in which it is safe to fire.
- (xii) Take the earliest opportunity of visiting infantry posts near his area.

Throughout the occupation of the position, and whilst in action, the section commander will ensure that any information received regarding enemy, own troops, etc., is immediately passed on to all ranks of his section.

3. Inspection of a section area in defence.—The following are some of the points that a platoon commander will check when he inspects a section position in defence. The list is not comprehensive and must be regarded as a specimen only.

(a) Is the section commander "in the picture"?

(i) Does he know the latest information about the enemy?

(ii) Own troops.

Does he know their positions?

Has he made contact with those nearest?

Has he full information about patrols?

Has he arranged for protection by neighbouring troops where necessary?

Does he know position of nearest H.Q.?

(b) The task.

(i) Arc.

Can both guns cover the arc?

Organization of arc, including reference points.

Range cards: areas in which it is safe to fire marked in on range card.

(ii) Fixed line.

Location and safety: platoon commander details an area in which fire will fall. Section commander responsible for selecting actual point of aim and for ensuring that fire is safe and effective.

Aiming post planted and collimators adjusted.

Deflection drums and direction dial at angle recorded.

Range and angle of sight left on respective drums and recorded.

Aiming lamps ready for use.

(c) Stores.

(i) Everything off the carriers.

(ii) All ammunition handy to the guns.

(iii) Spare parts cases complete.

(iv) Oil in traversing handles.

(v) Stores not required at guns concealed in convenient and tidy dump.

(vi) Water: condenser cans full and source of supply reconnoitred.

(vii) Cases, cans, oil, complete.

(viii) Spare parts box: all breakages replaced.

(d) Readiness.

(i) Sentry (or sentries) posted; gas detectors.

(ii) Duty rosters for sentry and digging made out.

(iii) Digging properly organized and in progress or completed.

(iv) Guns camouflaged as necessary.

(v) Guns half loaded and thumbpiece pressed.

(vi) S.O.S. and place from which it will be sent up.

(vii) Alarm posts and alarm signal.

(e) Section personnel.

(i) Has all information been passed on to every man—especially regarding S.O.S.?

(ii) Does everyone know his action on alarm signal?

(iii) Are all administrative instructions fully understood—including sanitary arrangements?

(iv) Do neighbouring troops know whereabouts of line of fire, and have arrangements been made to prevent their crossing it?

(v) Does everyone know position of platoon H.Q. and route to it?

M.M.Gs. IN THE WITHDRAWAL

1. In the withdrawal machine guns may be employed as follows:—

(a) To stiffen the defence of the rear guard position, to delay the enemy's approach, interfere with his repair work on demolitions, and prevent his assembly for attack.

(b) As part of a rear party to remain late on the position to cover the final withdrawal of less mobile elements.

2. In withdrawal, guns will normally be sited to cover wide frontal arcs with long fields of fire.

3. The duties laid down in Lesson 96 refer to the occasion when the withdrawal has been premeditated and the situation allows a comprehensive reconnaissance to be made of the next position in rear.

In other circumstances a platoon may have to occupy, at short notice, a series of intermediate positions. The platoon commander, may, therefore, have little or no opportunity for any detailed reconnaissance and must act in accordance with the immediate needs of the situation.

4. To make full use of their fire power and mobility, it may sometimes be necessary in the withdrawal to fire guns from the carrier. In these circumstances the detail in Lesson 96, referring to the disposition of vehicles, will not apply.

LESSON 96.—DUTIES SPECIAL TO WITHDRAWAL

1. Preparation for withdrawal to a new position

(a) Normally a warning order is issued, and this will usually take the following form :—

“ — will withdraw. No rearward movement except recce. parties before — hrs.

Recce. parties will report to — at — at — hrs.

Thinning out may begin at — hrs.

The position will be abandoned at — hrs.

All personnel will be clear of — by — hrs.”

(b) *The platoon commander will :—*

(i) Send this message to his section commanders and order the reconnaissance party to report as ordered.

(ii) Choose a platoon rendezvous in rear of the position and a route to it for each section.

(iii) Reconnoitre the route to company rendezvous, if any.

(iv) Decide the method of withdrawal.

(v) Arrange to bring up the carriers, if necessary.

(vi) Issue orders to the section commanders about the above, including :—

Method of withdrawal and description of new position.

Timings and routes.

Platoon rendezvous or section rendezvous on the new position.

Company rendezvous, if any, and route to it.

Route platoon H.Q. will take.

Arrangements for bringing up carriers, if necessary.

The method by which the order to withdraw will reach the section commander.

(c) *The section commander will :—*

(i) Make a plan for the removal of any surplus stores and kit to the carriers when thinning out begins, and will see that all are informed.

(ii) Be responsible that the route to the platoon rendezvous is reconnoitred.

2. **Reconnaissance party.**—The normal reconnaissance party will be composed of the following personnel :—

Platoon serjeant.

One rangetaker.

One batman.

Platoon orderly.

This party will travel in the platoon serjeant's carrier. Sufficient tools should be taken to enable the reconnaissance party to make hasty emplacements or to improve the existing cover. A director, gun flags, zero posts, and pegs, if necessary.

3. **The reconnaissance of the new position.**—The platoon serjeant, accompanied by the reconnaissance party, will carry out the reconnaissance of the new position as follows :—

(a) He will order the rangetaker to prepare range cards for both sections.

(b) In accordance with the orders he has received, and after reconnaissance of the ground, he will select section areas, gun positions, a platoon O.P., a position for platoon H.Q., and positions for vehicles.

(c) He will point out to the rangetaker and batman, each of whom will act as guide to a section, the gun positions, arcs of fire, and positions for vehicles for their respective sections.

The guides will be posted on the line of withdrawal of the platoon, or, if the sections are withdrawing independently, at section rendezvous, from which they will lead the sections to their respective areas.

On arrival in these areas the guides will there give the section commanders the above information about the section positions.

(d) As soon as the reconnaissance is complete, the platoon serjeant will send a message to the platoon commander informing him where the section guides will be posted and giving any essential information about the new position or the route to it.

(e) He will remain on the new position and, on arrival of the platoon, will superintend its occupation.

He will give full information to the platoon commander when he arrives and will hand over to him.

Section commanders will be given all available information as soon as possible.

4. The withdrawal

(a) *The platoon commander will:—*

(i) Personally ensure that the order to withdraw reaches section commanders.

(ii) Satisfy himself that the withdrawal has been carried out.

(iii) Take charge of the platoon at the platoon rendezvous and move it to the new position, unless it has been necessary to order section rendezvous on the new position.

(b) *The section commander will:—*

(i) Order carriers to be brought up under cover as close as possible to the gun position.

(ii) Order Nos. 3 and drivers to take any unnecessary stores back to the carriers as soon as the time for thinning out arrives.

(iii) When the time for abandoning the position arrives, order the guns and remaining stores to be taken back and loaded on to the carriers.

(iv) Lead carriers back to the platoon or section rendezvous.

If the withdrawal is by night the section commander will:—

(i) Ensure that carriers are not brought up so close to the position as to jeopardize safety through noise.

(ii) Allow sufficient time for the unnecessary stores to be taken back quietly to the carriers.

(iii) Ensure that sufficient ammunition and stores are left with the guns to maintain them in action until the order to withdraw is given.

M.M.Gs. BY NIGHT

LESSON 97.—OCCUPATION OF A POSITION—NIGHT

Duties when a preliminary reconnaissance can be carried out in daylight.

Reference should be made to Sec. 26 where necessary.

1. Before the occupation.—Platoon commander

(a) Goes to his platoon area, taking with him a reconnaissance party, when possible consisting of:—

Two section commanders with director, flags, zero posts, and pegs.

Two rangetakers.

Platoon orderly.

Batmen.

If not otherwise required, the platoon serjeant should also be in this reconnaissance party.

(b) On arrival he carries out his reconnaissance, including the selection of gun positions.

He orders the necessary ranges to be taken.

He and the platoon serjeant, if present, carry out the pegging of gun positions, assisted by the section commanders.

(c) In addition to selecting gun positions he will decide on as many of the following as may be necessary:—

Targets (and arcs of fire, if necessary).

Positions for vehicles.

Positions for O.P. and platoon H.Q.

Arrangements for local protection.

The type of concealment and extent of digging, if any, to be carried out.

Rendezvous for the platoon, or sections, as near as possible to the gun positions.

The approaches from the rendezvous to the gun positions, arranging that these routes can be recognized in the dark.

(d) He gives the platoon serjeant and section commanders all available information regarding enemy, own troops, and targets, and issues orders on the points detailed in para. (c) above.

(e) He leaves sentries as necessary to safeguard the preparations made for the occupation.

(f) When the reconnaissance is completed the party, less the men left on the position, will return to the platoon, where the platoon commander will :—

(i) Prepare fire control charts, issue and explain them as necessary.

(ii) Issue all available information to the platoon.

(g) On occasions the reconnaissance party may have to be reduced to a minimum :—

Platoon commander, or platoon serjeant.

One rangetaker.

One man with director, flags, zero posts, and pegs.

In this event the platoon commander will be responsible for the pegging of both section areas, and will issue orders on return to the platoon.

2. Duties on the occupation of the position

(a) On arrival at the rendezvous, if the section commanders were present during the reconnaissance, they lead their sections direct to the gun positions and come into action.

(b) If the section commanders were not present during the reconnaissance, the platoon commander, or the platoon serjeant if he reconnoitred the position, takes forward one section to its gun position, and points out the gun flags and direction pegs to the section commander. He then returns to the rendezvous and does the same for the other section.

(c) When necessary, the platoon serjeant will be ordered to collect the section vehicles and take them to the pre-arranged place.

3. Duties when no daylight reconnaissance is possible.

(a) The guns may be laid by compass, provided that it is possible to "fix" the gun position and the position of the target.

(b) It is possible to arrange for fixed lines with fair accuracy at close ranges, provided that a light can be shown on the place where fire is to fall.

The platoon commander first chooses positions for his section.

Having given orders for the occupation of the positions he proceeds with a lamp to the place, or places, where he requires the fire of the sections, and exposes a light in the direction of the guns.

A signal must be arranged to notify the platoon commander when guns have been correctly laid.

APPENDIX A

SPOTLIGHT APPARATUS FOR TRAINING

M.G. PERSONNEL

After the apparatus has been correctly assembled to the gun, and all connections made (*see* sketch in box), the following is the procedure :—

Focusing.—Telescopic focus from the rear end of the spotlight projector.

Harmonizing.—The light must be harmonized with the tangent sight and this is done as follows :—

Set the spotlight sight (converted Lewis gun sight) and the tangent sight to the same range, *e.g.* 1,500 yards. Lay the gun on a good aiming mark and bring the light on to it by making vertical adjustments by means of the thumbscrew on the projector, and lateral adjustments by means of the clamping screw *underneath* the projector sight. Extreme accuracy is required in making these adjustments.

The apparatus is now ready for use.

The apparatus can be used for teaching N.C.Os. and men, exercising them in indication and recognition, for demonstrating fire orders, and for exercising men in interpreting fire orders, using combined sights and making corrections for wind.

In demonstrating fire orders it is necessary that the light should be controlled from the thumbpiece switch in conjunction with the vibrator, which is done quite easily by connecting the wiring up in a different way.

On the fire order being given the gun numbers carry out their duties in the normal way. In order to maintain the harmonization of the light with the tangent sight, it is necessary for the instructor or an assistant to adjust the projector sight to correspond with the tangent sight.

Example.—The order is given "All 1400".

No. 1 sets the tangent sight to 1,400 yds.

The instructor or assistant sets the projector sights to 1,400 yds.

In the case of combined sights :—

The order is given "... All 1600".

Nos. 1 set their tangent sights as ordered.

The instructor or assistant sets the projector sights to 1,600 yds.

i.e. the correct range.

The order is given "STOP".

"No. 1 down 50."

"No. 2 up 50."

Nos. 1 set their tangent sights accordingly.

The instructor leaves his projector sights at 1,600.

This will have the effect on the target of one gun being slightly high, and the other being slightly low, and on opening fire the rings of light will have the appearance of overlapping beaten zones. It is here that the necessity for extreme accuracy in harmonizing is seen.

In teaching or exercising men in fire orders it is necessary that the light should be controlled independently of the thumbpiece switch. Hence the press switch which is controlled by the instructor. This control is necessary for the following reason:—

Instead of the No. 1 carrying out his duties as taught, occasionally checking his aim between bursts, traversing correctly 15 minutes, relaying on the command "Stop," etc., he would allow himself to be guided by the light. Whereas if the instructor controls the light, he can produce as necessary for the purpose of checking the actions of the No. 1.

Making correction for wind

On the upper side of the clamping plate of the projector sight will be seen a series of graduations. These are for making or checking corrections for wind. The graduations are of 15 minutes, and are adjusted by means of the small milled head screw at the side. Normally, this scale must be kept at zero.

On a wind correction being ordered, the No. 1 makes his adjustment by tapping his gun. The instructor or his assistant adjusts the projector sight the amount ordered. On opening fire the light should now still fall on the target, showing whether the man's adjustment is correct or otherwise. On completion of the fire order care must be taken to re-zero the wind scale.

The vibrator should be used to teach the correct length of burst according to the range, and later as a check on the man in doing so.

In using the apparatus the following suggestions are made:—

1. Service guns should be used to eliminate as far as possible any play between the gun and tripod.

2. As the apparatus will normally be used indoors, a "T" base or sand-bags should be used to allow the traversing clamp to be adjusted correctly by the No. 1.

3. Guns must be placed as close together as possible, otherwise as the guns are switched about over the landscape target, the light will tend to go out of focus, and errors will creep into the harmonization.

APPENDIX B INFANTRY PACK

1. The pack is used as the normal method of carrying guns and equipment by machine-gun platoons in countries where the nature of the ground is unsuitable for vehicles.

2. It is desirable that animals for machine-gun pack saddlery purposes should be carefully selected. Those with abnormally broad hips, or with points of the hips very prominent, should not be chosen.

3. Description and assembling of packsaddlery

Instructor's notes

Stores:—

As shown in the table below.

DETAIL OF INFANTRY SETS

(For infantry whose equipment is carried on pack)

Description	Number for each	
	Gun and tripod set	Ammunition set
(1)	(2)	(3)
<i>Section D.1</i>		
Bands, belly, P.M.G. ...	1	—
Bands, belly, P.M.G., straps, long ...	1	—
Bands, belly, P.M.G., straps, short ...	1	—
Bands, belly, P.M.G., straps, supporting ...	2	—
Bits, bridoon, P.G.S. ...	1	1
Breechings, P.G.S., Mk V. ...	1	1
Caps, shovel, Mk. II* ...	1	—
Cases, horseshoe, P.G.S. ...	1	1
Chains, collar ...	1	1
Collars, breast, P.G.S., Mk. V ...	1	1
Collars, head, P.G.S., Mk. IV ...	1	1
Cruppers, P.G.S., Mk. V ...	1	1
Girths, P.G.S., Mk. V... ...	2	2
Girths, leather ...	—	1
Hangers, gun, sling ...	1	—
Hangers, tripod, sling... ...	1	—
Pannels, P.G.S., Mk. V, pairs ...	1	1
Racks, boxes, belt, ammunition, infantry ...	1	2
Reins, bridoon, P.G.S. ...	1	1
Straps, girth, P.G.S., Mk. II ...	4	4
Straps, pick and helve ...	3	—
Straps, detachable, shovel ...	1	—
Trees, P.G.S. ...	1	1

The sets of packsaddlery comprise certain articles of general service packsaddlery, supplemented by other articles of machine-gun packsaddlery.

Each article of packsaddlery will be described.

Explain and demonstrate how the parts are assembled.

4. Description

Articles common to both cavalry and infantry sets

Case, horseshoe.—For cavalry sets, the pattern formerly used for harness purposes, modified by the removal of the link from the back and the release of the strap with the chape (the latter being reduced in width to the size of the strap) are used.

For infantry the pattern formerly used for harness purposes (unmodified) is utilized.

Bit, bridoon.—Is an ordinary bridoon bit, but tinned to prevent rust. The mouthpiece is fitted at each end with a ring to receive the iron stops on the reins when the ordinary packsaddlery reins are used, or for universal saddlery reins to buckle to. The "T" pieces are secured to the rings by links and solid loops, and are for fitting under the leather loops on the packsaddlery head collar.

Breeching, Mark V.—Is used for preventing the packsaddle from slipping forward. The straps buckle to the body part of the breeching after being looped to the links on the pannels. It is supported by its hip strap, which passes through a loop on the crupper before buckling.

Collar, breast, Mark V.—Is used to prevent the load from slipping back. The straps, after passing through the links of the pannels, buckle to the body part of the breast collar. It is supported by its own neck strap.

Collar, head, Mark IV.—Similar in design to the universal saddlery head collar, but the furniture is tinned iron, and it is fitted on the lower part of the headpiece with leather loops for the "T" of the bridoon bit to fit into, and with a ring on the noseband.

Crupper, Mark V.—Is made with forked straps, which, after being looped to the rear arch of the packsaddle, buckle to the body of the crupper. The use of the crupper is to assist in preventing the saddle slipping forward.

Girths, Mark V.—Girths are made of worsted web. They are fitted with chapes and buckles at either end to connect up with the girth straps. These girths have no connecting piece as in earlier patterns, but may be crossed when girthing up if desired.

Girths, leather.—Is a leather steadying girth, with a billet and buckle at each end. It can be lengthened by the "strap, extending".

Pannels, Mark V.—Each pannel consists of a leather back, with tan dowlas lining, the stuffing being horsehair. They are

attached to the sidebars by leather pockets, the front pocket having a strap and buckle for securing purposes. An opening in the outer side admits of adjustment of the stuffing.

Pannels are fitted with links to take the straps of the Mark V breast collar or breeching—the hooks attached to such links are intended for the chains of earlier marks.

The stuffing can be adjusted as required and kept in position by additional spot stitches if necessary.

Straps, girth, Mark II.—Are for buckling the packsaddle girth to. They are of leather, and made with a loop at one end.

Cap, shovel, Mark II.—Is a leather cap, made to fit on the pan of the G.S. shovel. It has a detachable strap (apart from the "strap, shovel", which do not form part of the cap), which is used for securing it.

Straps, pick and helve, shovel.—Are for use with the articles shown in the "Details of Sets".

The "straps, pick and helve", are for suspending the articles in question as part of the load.

The "strap, shovel", retains the handle of the shovel against the rear arch of the packsaddle.

Articles special to infantry sets

Trees, P.G.S.—Consists of two steel arches (to which rigid hanging hooks are riveted) connected by sidebars made from padouk or sabicu wood.

The arches are jointed to the sidebars to admit of them turning automatically, thus allowing of adjustment to the backs of large or small animals, or to meet loss of condition, and to obviate the necessity of several sizes.

The sidebars are slotted for the girth straps to loop on.

Bands, belly.—These belly bands are broad leather girths 52½ in. in length by 3 in. in width, fitted at either end with a buckle and fixed leather loop to connect with the "straps, long", and "straps, short", which follow.

Straps, long (or straps, short).—Are straps fitted at one end with a fixed leather loop. The long strap is 48 in. by 1½ in. and the short 40 in. by 1½ in.

Straps, supporting.—These are narrow straps, 13 ins. by ¾ in., which prevent the belly band dropping to the ground when the above-mentioned long and short straps are unbuckled to release the load.

Chains, collar, P.G.S.—Are used for infantry in place of the headrope. It consists of a length of chain with a bent "eye" link at one end, and a "T" piece at the other. It is also fitted with two cross aperture links for the "T" to pass through as required.

Hanger, tripod, sling.—Is designed so that the tripod may be slung in it to the hooks of the packsaddle. It consists of a wood bearing bar, added to at the rear end by a wood block which keeps the tripod away from the animal's hip. Leather slings, felt lined, are attached to the bearing bar, the front sling being wider and longer than at the rear. Both slings are fitted at either end with metal dees for hooking to the packsaddle, and the upper dees are provided with strap and buckle for securing both dees after the tripod is slung.

Hanger, gun, sling.—Is constructed on the same principle as the tripod hanger, but is intended for the carriage of the gun. It differs from the tripod hanger in the following respects:—

The bearing bar is added to at **either** end by wood blocks which extend below it, and keep the gun sufficiently away from the side of the animal.

Both slings are of similar width.

A leather chape, carrying a metal square, is screwed to the centre of the bearing bar on the upper side for the "girth, leather", to buckle to when required.

Racks, boxes, belt, ammunition, infantry.—Consist of a canvas body with a wood bottom and rope slings. The body is bound with leather at the lower edge, as also at the four upper corners, and is attached directly to the wood bottom at its outside edges. No partitions are arranged, but a shaped metal plate is inserted at each corner in order to strengthen them and define the shape at the top.

The rack is suspended by a rope sling at either end, which passes under the bottom and outside the ends. A metal square is attached to the wood bottom for the leather girth to attach to, and holes are made for drainage purposes.

Reins, bridoon.—The rein is made from Preller leather. It is fitted at each end with a tinned iron stop to connect with the rings of the bit.

5. To assemble the parts

General instructions

NOTE.—The front arch of the packsaddle tree is narrower than the hind arch.

Packsaddle.—The **tree** is the frame of the packsaddle. The **pannels** are attached to the tree by means of front and rear pockets, into which the sidebars are inserted. The front pockets are fitted with buckles and straps for securing purposes.

The **girth straps** are looped to the sidebars over the upper edge, through the slots cut for the purpose.

The **girths** are buckled to the girth straps on the off-side in readiness for use.

The **crupper** straps are looped to the rear arch of the packsaddle and then buckled to the body of the crupper.

Bit, bridoon.—The **bridoon bit** at one end may be passed through the leather loop on the off-side of the head collar in readiness for "bitting" the animal.

Breechings; collars, breast.—The straps of the breeching are first looped to the links on the pannels and then buckled to the body part of the breeching. The straps of the breast collar, after passing through the links of the pannels, are buckled to the body part of the breast collar.

Instructions special to infantry sets

Bands, belly, straps, long.—To be looped to the bearing bar of the gun hanger on the gun set, and the tripod hanger on the tripod set, by passing up behind the bearing bars of the respective hangers, and then through their own fixed loops, the loops remaining at the upper edge of the bearing bars.

Bands, belly, straps, short.—To be looped to the near-side bar of the adjustable tree on the gun set, and the off-side bar of the adjustable tree on the tripod set, in a similar manner to that of the long strap, but the loops are to remain at the lower edge of the sidebars.

Bands, belly, straps, supporting.—To be looped up through the slot in the "lay" of the pannel on either side of gun or tripod sets.

The **belly band** is afterwards buckled to these straps, and is supported by them whenever it is released from its long and short straps; it would otherwise drop to the ground.

Straps, pick and helve.—Looped to the bearing bar of the tripod hanger by passing down behind the bearing bar, and then through their own fixed loops.

Straps, detachable, shovel.—To be looped to the rear arch (near side) of the gun set, and the rear arch (off side) of the tripod set.

Saddling.—Before saddling it is essential that the animal's back should be free from dirt, and any dried sweat or matted hair brushed out. The pannels should be thoroughly dried, beaten, and freed from any dirt or grit before being placed on the animal's back. Neglect of these precautions is the most fertile source of sore backs. Constant attention must be paid to the stuffing of the pannels and care taken to prevent them from becoming hard and lumpy.

When possible, animals should not be kept standing longer than is necessary when saddled and loaded.

If a saddle has shifted, do not try to push it into a better position; off-load, off-saddle, and re-saddle properly.

Do not allow men to hang their rifles or equipment on the loads, or hold on to them on the march.

Girths may, if wished, be crossed under the animal's belly, and this method is often useful when there is a tendency for the girths to slip. When the girths are fastened the buckles should rest on the lower edges of the pannels, as this will prevent buckle galls.

The breeching and breast collar should be so fitted that movement of the animal is not impeded. Constant rubbing of either of these articles, when fitted too tightly, will inevitably cause galls.

The crupper requires careful fitting, as otherwise the animal's neck will be galled. A good rough guide is to arrange that the breadth of the hand will pass between the body of the breeching and the body of the crupper.

The bridoon bit should hang low enough to prevent the corners of the animal's mouth from being wrinkled.

6. Packsaddle drill (Infantry)

Instructor's notes

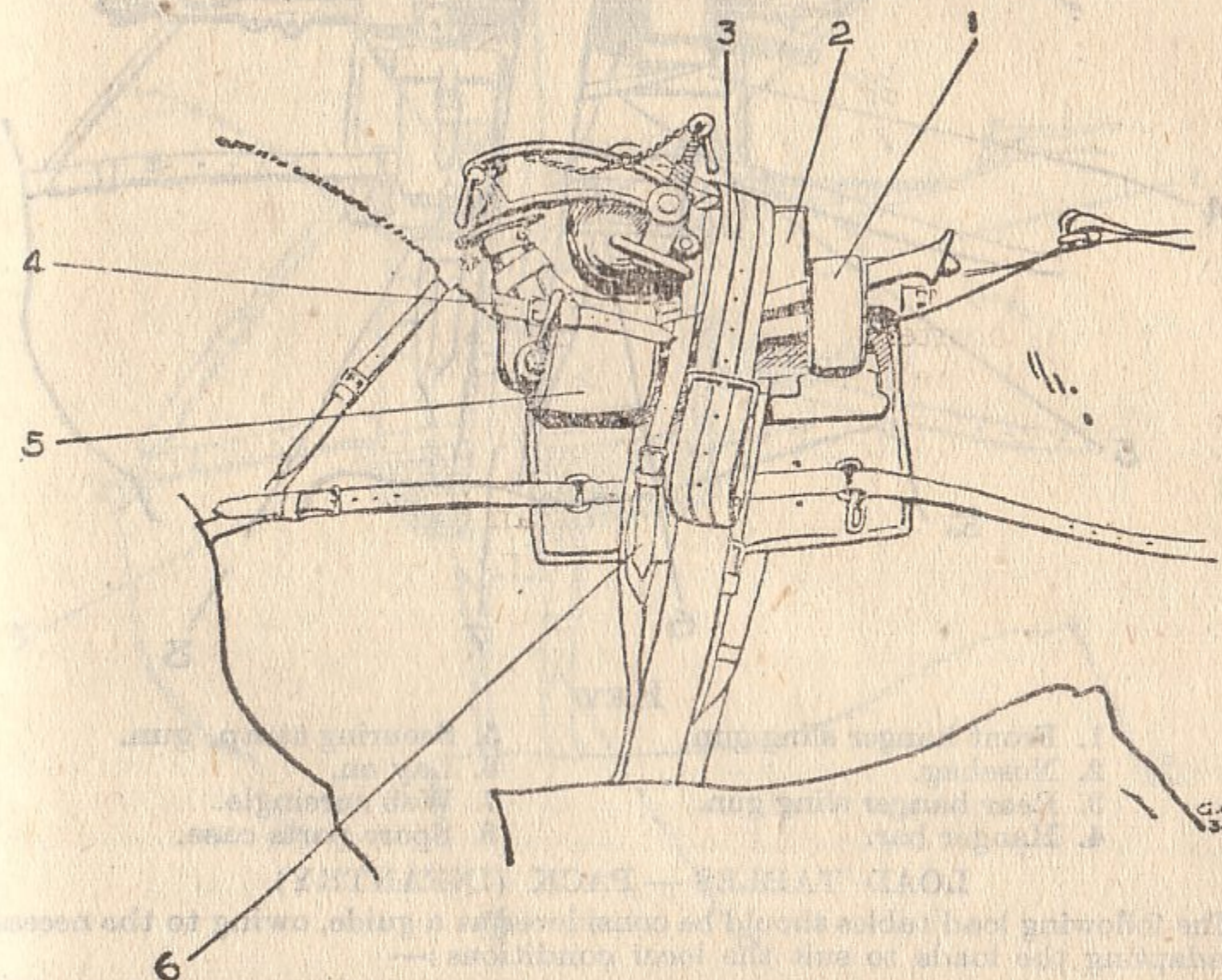
Stores :—

Two pack animals fitted with pack saddles, and feeds. Tripod, gun, condenser can and tube, spare parts case, cleaning rod, one case, cans, oil, eight single metal belt boxes or eight liners containing Mk. VIII ammunition, one gun hanger, one tripod hanger, two surcingles, web, two ammunition racks, one water bucket.

PLATE 21

INFANTRY—GUN PACK ANIMAL

(Near side)

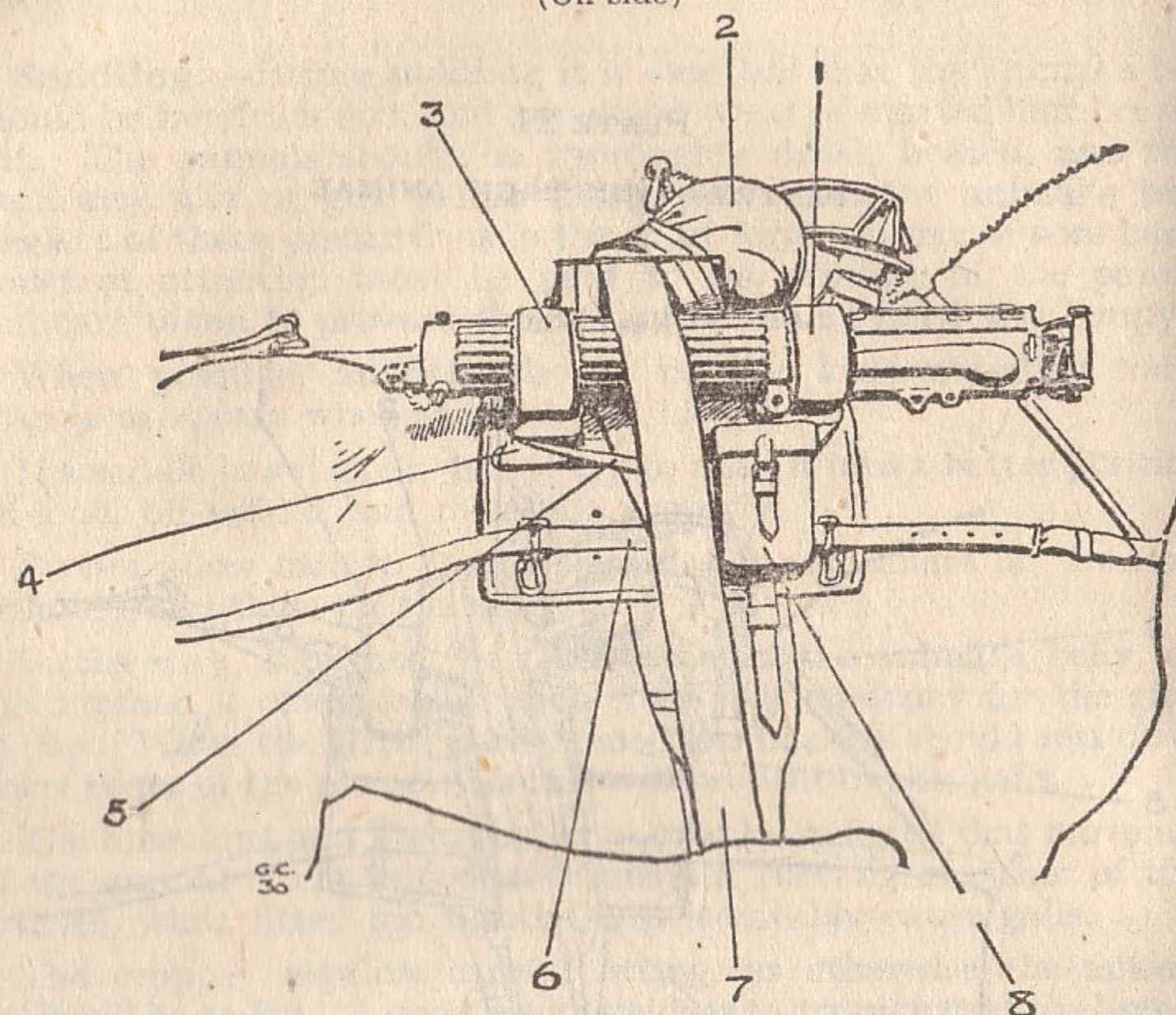


KEY

1. Rear hanger sling tripod.
2. Ammunition box.
3. Web surcingle.

4. Strap securing tripod.
5. Front hanger sling tripod.
6. Securing strap tripod legs.

PLATE 22
INFANTRY—GUN PACK ANIMAL
(Off side)



KEY

- | | |
|----------------------------|-------------------------|
| 1. Front hanger sling gun. | 5. Securing strap, gun. |
| 2. Nosebag. | 6. Lay on. |
| 3. Rear hanger sling gun. | 7. Web surcingle. |
| 4. Hanger bar. | 8. Spare parts case. |

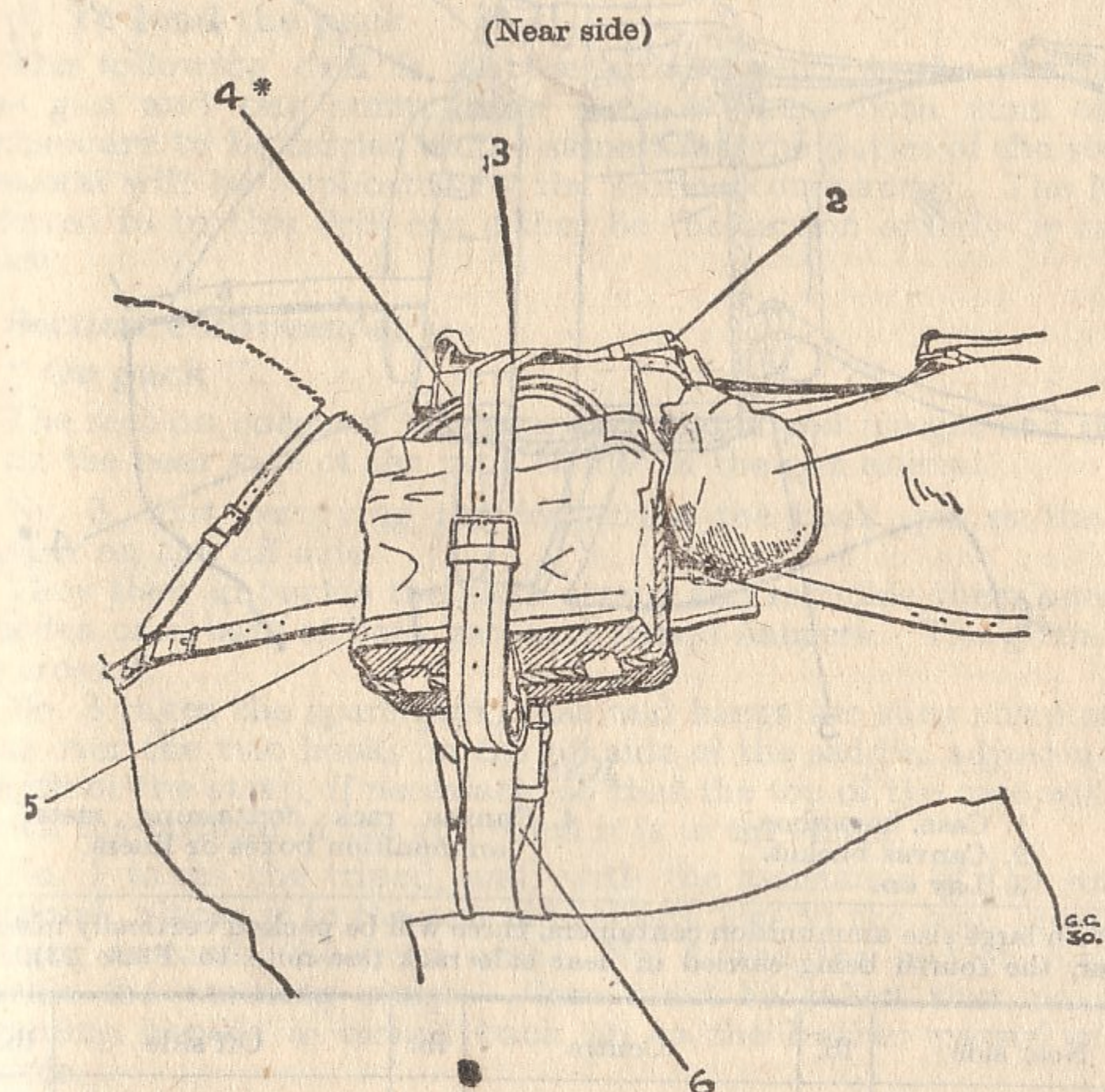
LOAD TABLES — PACK (INFANTRY)

The following load tables should be considered as a guide, owing to the necessity of adapting the loads to suit the local conditions:—

Near side	lb.	Centre	lb.	Off side	lb.
GUN PACK					
Tripod	52	Ammunition box (stripless) ...	43	Gun, with barrel casing (filled) .	42
Hanger, tripod, sling	9	Nosebag (filled) ...	8	Hanger, gun, sling	8
		Case, horseshoe (filled) ...	3	Cleaning rod ...	1
				Spare parts case	8
Total	61	Total	54	Total	59

Recapitulation of weights				lb.
Near side ... ..	...	...	...	61
Centre ... ..	...	...	...	54
Off side ... ..	...	...	...	59
Pack saddle ... ..	...	...	...	28
Grand total ... ..	...	...	...	202

PLATE 23
INFANTRY—AMMUNITION PACK ANIMAL
(Near side)

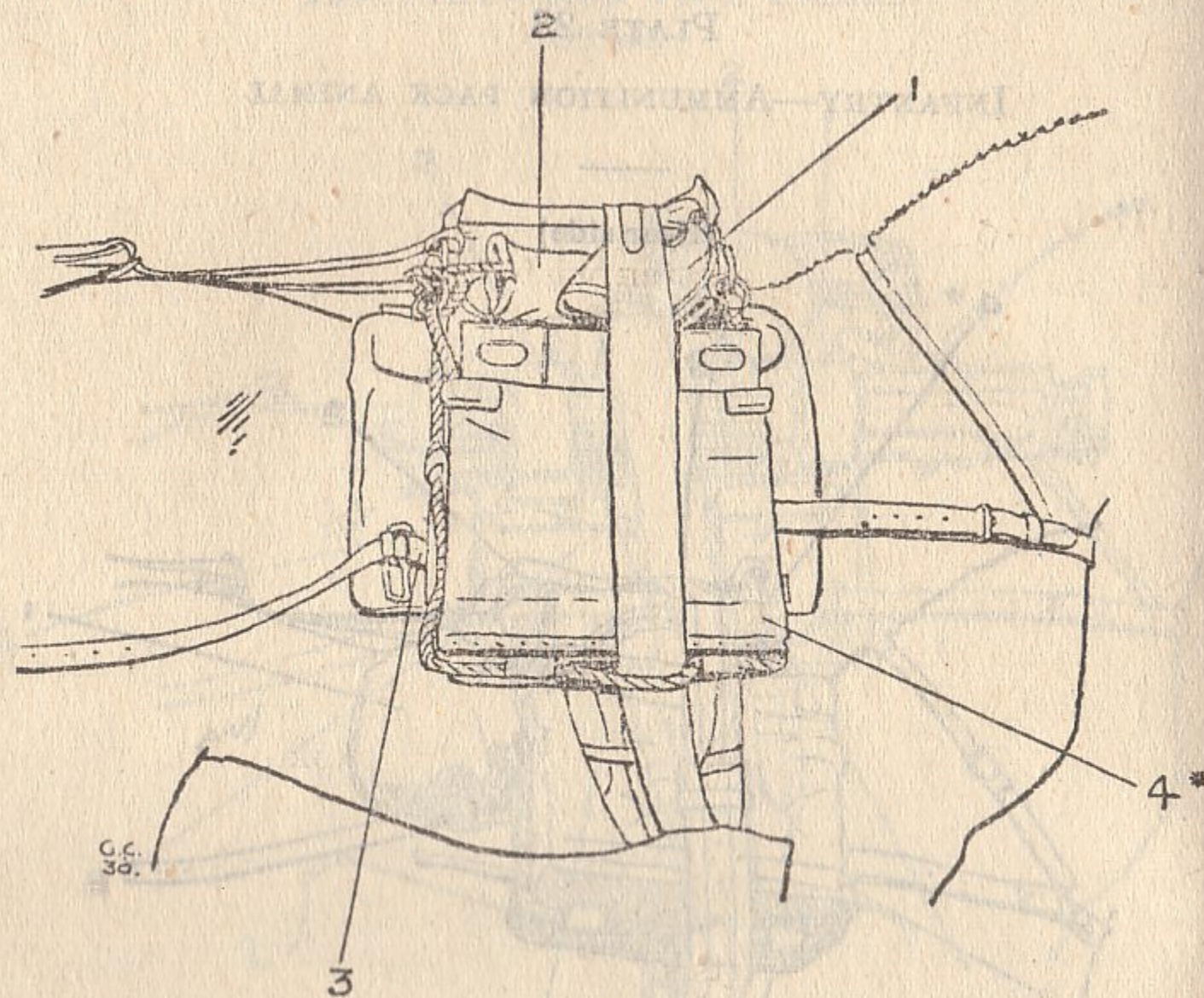


KEY

- | | |
|------------------------------|--|
| 1. Nosebag. | 5. Canvas rack containing meta ammunition boxes or liners. |
| 2. Cases, cans, oil. | 6. Steadying strap (leather girths). |
| 3. Surcingle. | |
| 4. Condenser can, with tube. | |

* With large size ammunition containers (metal), instead of two ammunitio. containers being packed horizontally, these will be packed vertically and the cor denser can carried on top of the pack saddle.

PLATE 24
INFANTRY—AMMUNITION PACK ANIMAL
(Off side)



KEY

1. Case, horseshoe. 4. Canvas rack containing metal
2. Canvas bucket. ammunition boxes or liners.
3. Lay on.

* With large size ammunition containers, three will be packed vertically instead of four, the fourth being carried in near side rack (see note to Plate 23).

Near side	lb.	Centre	lb.	Off side	lb.
AMMUNITION PACK					
2 boxes, belt (single), or liners	42	Bucket, canvas.	1	4 boxes, belt (single), or liners	84
Rack, canvas ...	6			Rack, canvas ...	6
Case, cans, oil ...	8			Case, horseshoe (filled) ...	3
Nosebag (filled) .	8				
Condenser can ...	25				
" tube .	1½				
Carrier ...	3				
Total ...	93½	Total ...	1	Total ...	93

Recapitulation of weights

	lb.
Near side ...	93½
Centre ...	1
Off side ...	93
Pack saddle ...	28
Grand total ...	215½

The system of arranging a pack load is based on the following :—

(i) To avoid galling and sore backs the load must be of suitable weight, steady and well balanced, so that the saddle rides evenly. Adjustment of loads may be necessary, e.g. if the barrel casing is not filled.

(ii) The arrangement of the load must facilitate speed in off-loading.

(i) To load the pack

The following drill is written with reference to the packing of one gun and one ammunition pack. Where both guns of the section are to be carried at the same time, the duties of the section corporal will be duplicated by the section commander. The No. 5 referred to in this drill can either be the section orderly or range-taker.

Section commander :—

“ On pack ”.

The section corporal takes forward the tripod hanger and places it on the near side of the pack saddle of the gun animal.

No. 3, first removing the feed from the hook, places the gun hanger on the off side.

They then unbuckle the girth straps and rebuckle them over the wooden crossbars of both gun and tripod hangers. The girths will be crossed.

No. 3 takes the spare parts case and hangs the sling strap of the case over the two hooks on the off side of the saddle, adjusting the length of the strap, if necessary, so that the top of the case will just touch the bottom of the gun when it is in the slings.

No. 1 takes the tripod, and, with the assistance of the section corporal, places it in the rear side slings, legs to the rear, crosshead leaning towards the front arch. No. 1 and the section corporal buckle the securing straps. Care must be taken that no inner jamming handle is turned back on to the leather pannel of the saddle.

No. 2 takes the gun, and, with the assistance of No. 3, who takes up the cleaning rod, places it in the off side slings, muzzle to the rear, the front sling being passed over the feed block and the rear sling over the barrel casing.

Nos. 1 and 2 fix the straps, long and short, which are on the bars of the hangers, round the tripod legs and gun respectively, and buckle them on to the steadying strap.

No. 2 buckles the securing straps.

No. 3 then takes the cleaning rod and pushes it through the gun slings, front to rear, where the metal rings are held by the leather slings.

No. 3 takes one ammunition box and places it across the saddle, the ends fitting between the gun on the off side and the legs of the tripod on the near side.

No. 2 takes the feed and places it on the top of the ammunition box, securing the strap of the nosebag to the rear arch of the saddle.

The section corporal brings forward the web surcingle, and, assisted by No. 2, passes it through the metal straps of the ammunition box, over the feed, and under the belly, securing it on the near side.

No. 4 takes forward the full ammunition rack and case, cans, oil, and No. 5 the other loaded rack, together with the surcingle and canvas bucket.

No. 4 places the case, cans, oil, between the arches of the saddle of the ammunition animal, passing the strap around the arches and adjusting the length of the strap as necessary.

No. 5 places the canvas bucket between the front and rear arches of the saddle, the rope handle going under the rear arch and on the rear off-side hook of the tree.

Working together, No. 5 on the near side and No. 4 on the off side hang the racks on the pack saddle hooks, the metal "D's" on the bottom of the racks being nearest to the animal. They fasten the steadying strap (leather girth). When long enough, each end is passed through the slot in the "lay on" of the saddle, then through the metal "D" in the rack and the strap is buckled.

No. 5 fastens the other feed from the gun animal on to the rear arch on the near side.

Nos. 4 and 5 pass the web surcingle round the two racks, over the condenser can and ammunition boxes, and under the animal's belly and buckle it on to the near side.

NOTE.—There is no provision for carrying certain parts of the machine-gun equipment, *e.g.* the rangefinder, spare parts box, or the indirect fire equipment, and the amount of ammunition carried is limited. The rangetaker will carry his instrument in the canvas case. Any additional equipment required must be carried by the gun numbers.

ii. To off-load the pack

Section commander :—

"Off pack"

The numbers detailed in "On pack" will take off the stores.

The order in which they are taken off will be the reverse to "On pack."

iii. To prepare for action (pack)

Section commander :—

"Prepare for action"

Nos. 1 and 2 double to the gun and tripod pack and remove the tripod and gun respectively.

No. 3 doubles to the gun and tripod pack and removes the box of ammunition, spare parts case, and cleaning rod. He hands the spare parts case to No. 2.

No. 4 doubles to the ammunition pack, removes two metal belt boxes or liners from the off side, and the condenser can and tube from the near side.

He hands the condenser can to No. 3 and tube to No. 2.

If more ammunition is required, No. 5 will remove the same and pass it to No. 4.

The section corporal organizes loads as necessary, and, with No. 5, squares off all loose gear and straps after the stores have been removed.

iv. To come into action

Section commander :—

"Action"

Nos. 1, 2, and 3 act as in elementary gun drill.

v. To cease firing

Section commander :—

"Cease firing"

Nos. 1, 2, and 3 act as in elementary gun drill.

When signalled for, the pack animals, under orders of the section corporal, move forward to a position immediately in rear of the gun position, and the packs prepared to receive the equipment.

Section commander :—

"On pack"

The numbers will load the packs as in para. 6, i, above.



PLATE 10.—MOUNTING THE GUN



PLATE 11.—FIRING POSITION SITTING



PLATE 12.—MOUNTING THE GUN



PLATE 13.—FIRING POSITION



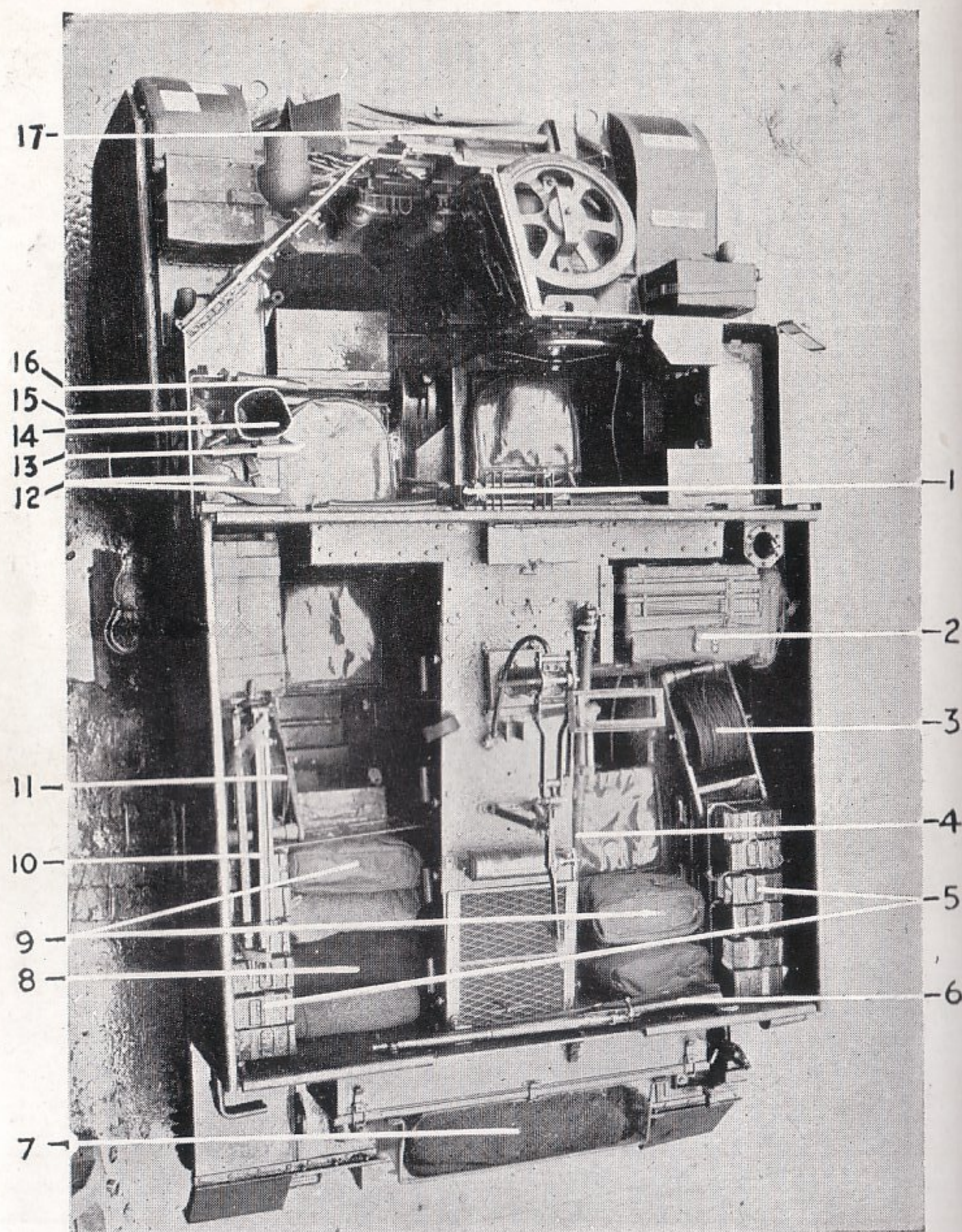
PLATE 14.—GUN MOUNTED TO FIRE DOWN
A SLOPE



PLATE 15.—GUN MOUNTED ON THE SIDE OF
A SLOPE

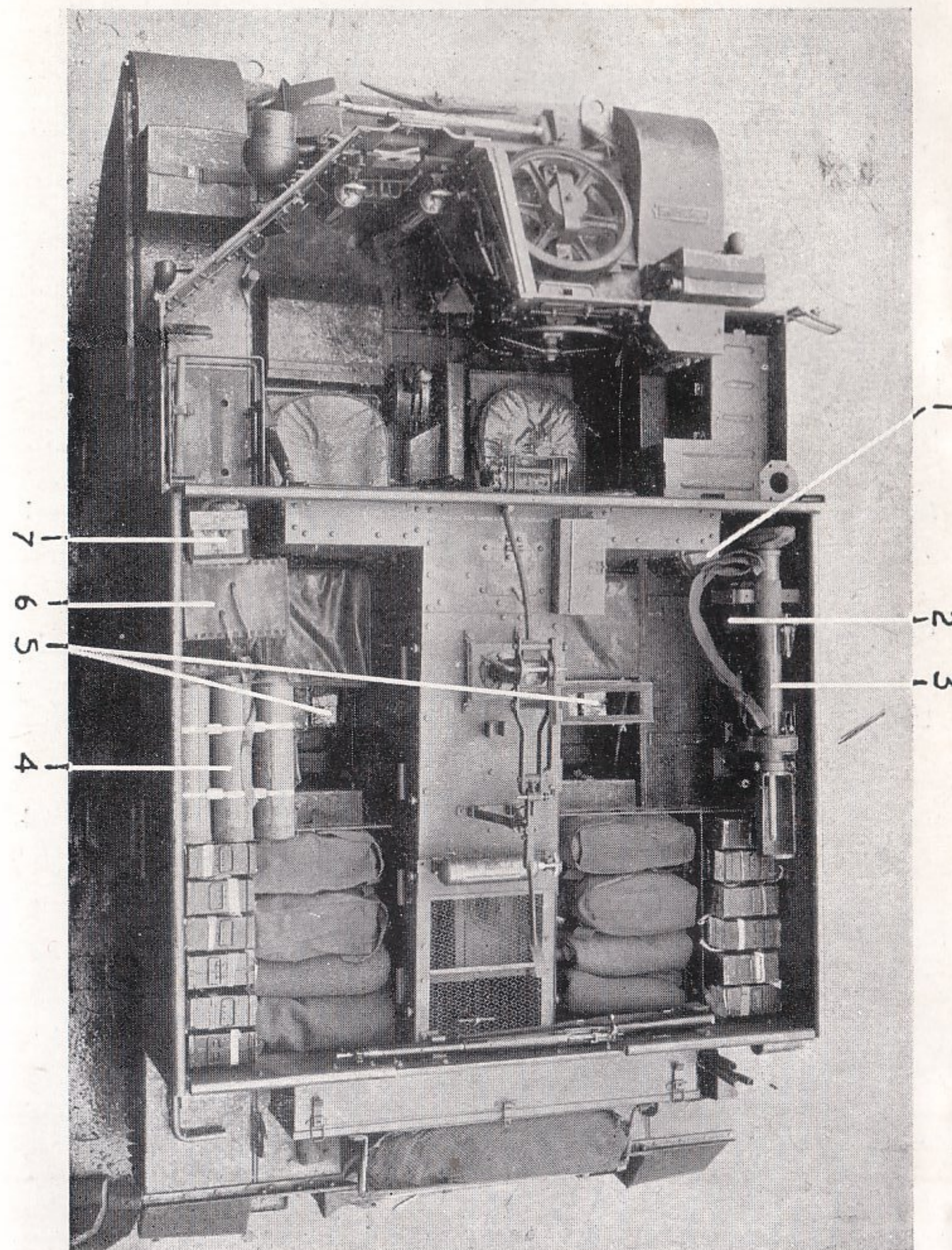


PLATE 16.—PLATOON COMMANDER'S CARRIER



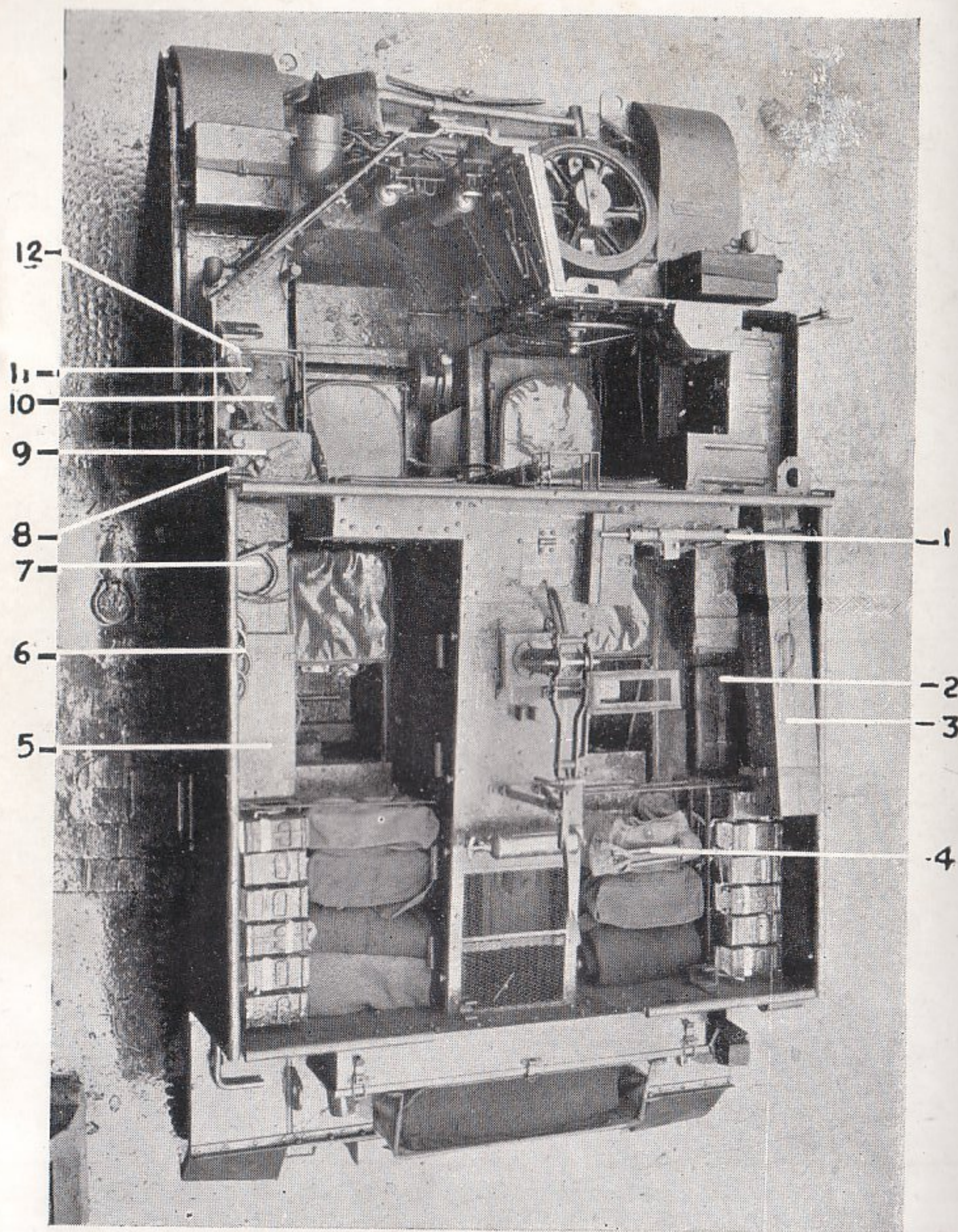
- | | |
|---------------------------------------|--|
| 1. Rifle. | 10. Stand, director. |
| 2. No. 22 set. | 11. Cable drum (440 yds., for use with |
| 3. Cable drum (880 yds., for use with | D Mk. V Telephones). |
| remote control). | 12. D Mk. V Telephones. |
| 4. Case, rods, aerial. | 13. Rattle. |
| 5. Liners. | 14. Megaphone. |
| 6. Rifle. | 15. Entrenching tool. |
| 7. Carrier net. | 16. Pistol, signal. |
| 8. Blankets. | 17. Pick and shovel. |
| 9. Packs. | |

PLATE 17.—PLATOON SERJEANT'S CARRIER



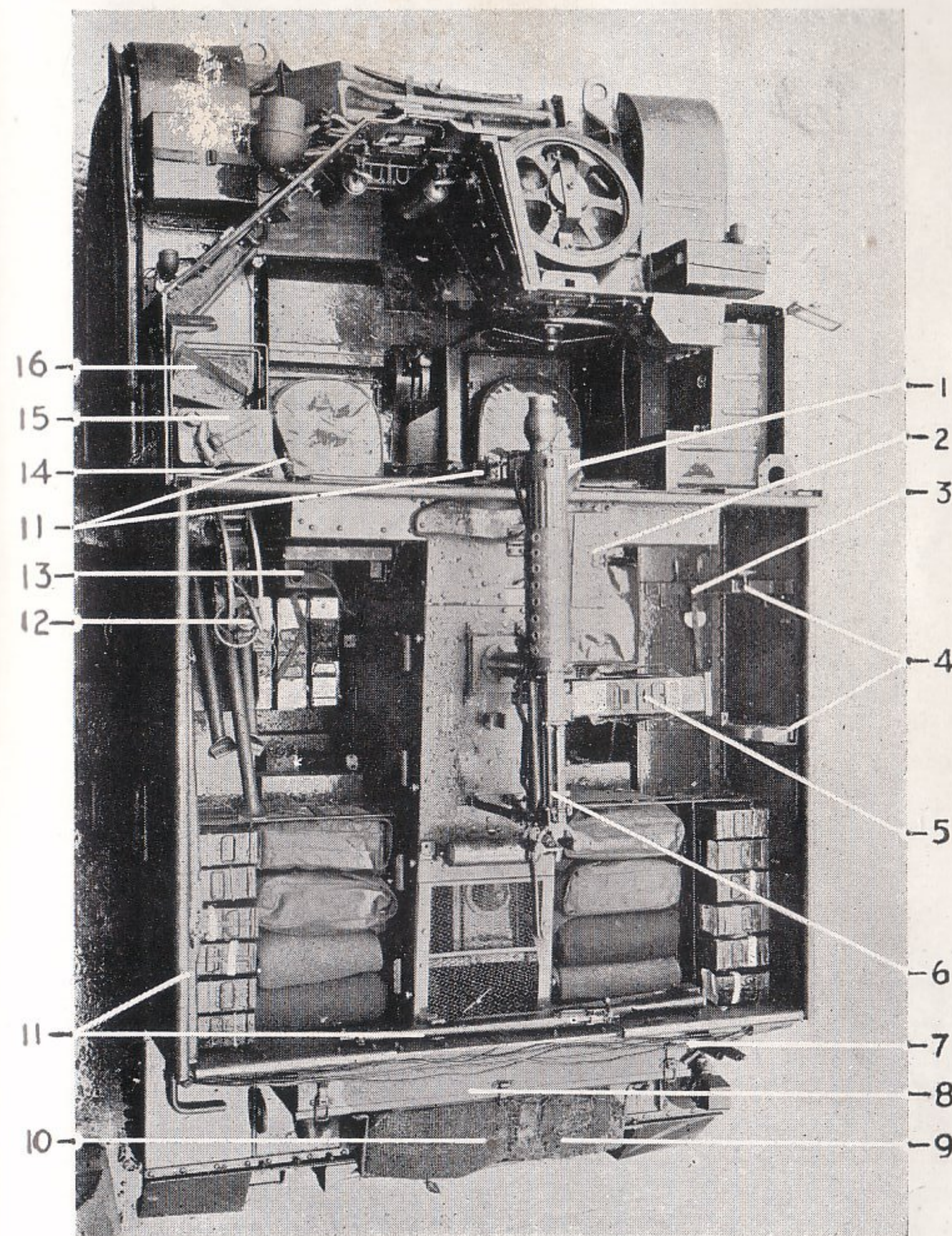
- | | |
|----------------------|--------------------|
| 1. Tin bleach, 7 lb. | 5. Liners. |
| 2. Case, cans oil. | 6. S.A.A. Mk. VII. |
| 3. P.I.A.T. | 7. Grenades. |
| 4. P.I.A.T. bombs. | |

PLATE 18.—SECTION COMMANDER'S CARRIER



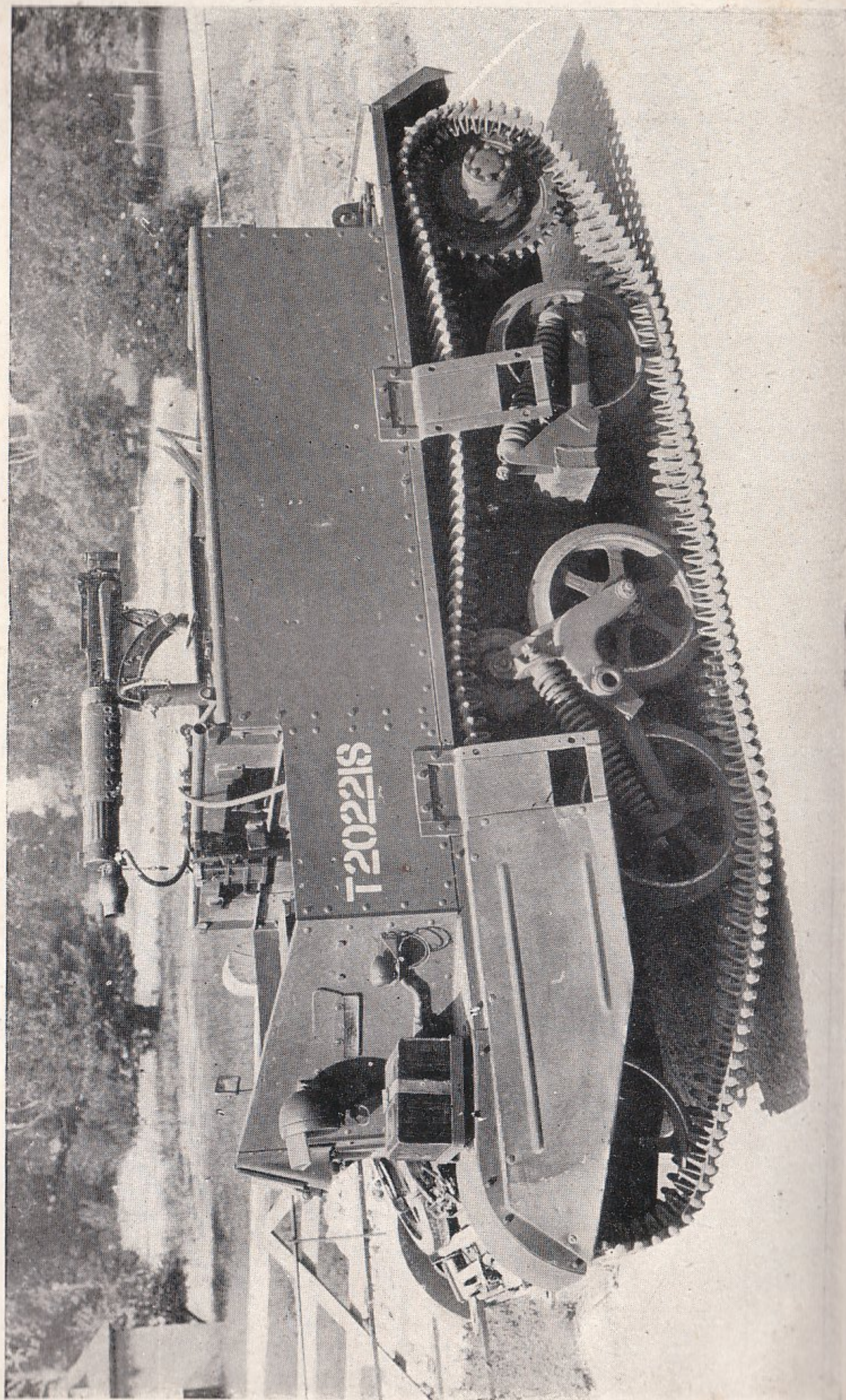
- | | |
|---|---|
| 1. Sten machine carbine. | 7. Spare parts box. |
| 2. Case, cans oil. | 8. Matchet. |
| 3. Rangefinder. | 9. Condenser can. |
| 4. Cover, rangefinder and stand. | 10. Hack saw. |
| 5. Boxes, instrument. | 11. Wire cutters. |
| 6. Zero posts (on senior section commander's carrier only). | 12. Gun flags (only carried on senior section commander's carrier). |

PLATE 19.—GUN CARRIER



- | | |
|---|---------------------------|
| 1. Spare parts case. | 9. Gun net. |
| 2. Gloves, M.G. (in box). | 10. Carrier net. |
| 3. Aiming post (odd sub-sections only). | 11. Rifles. |
| 4. Gun stowage fittings. | 12. Tripod. |
| 5. Liner. | 13. Condenser can. |
| 6. Gun. | 14. Condenser tube. |
| 7. Umbrella. | 15. Condenser can. |
| 8. Rear bin containing cleaning rod, spare barrel and haversacks. | 16. Dial sight (in case). |

PLATE 20.—GUN CARRIER





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